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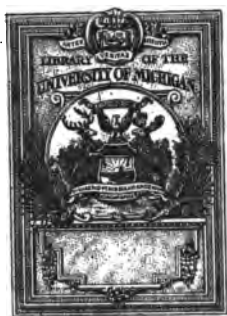
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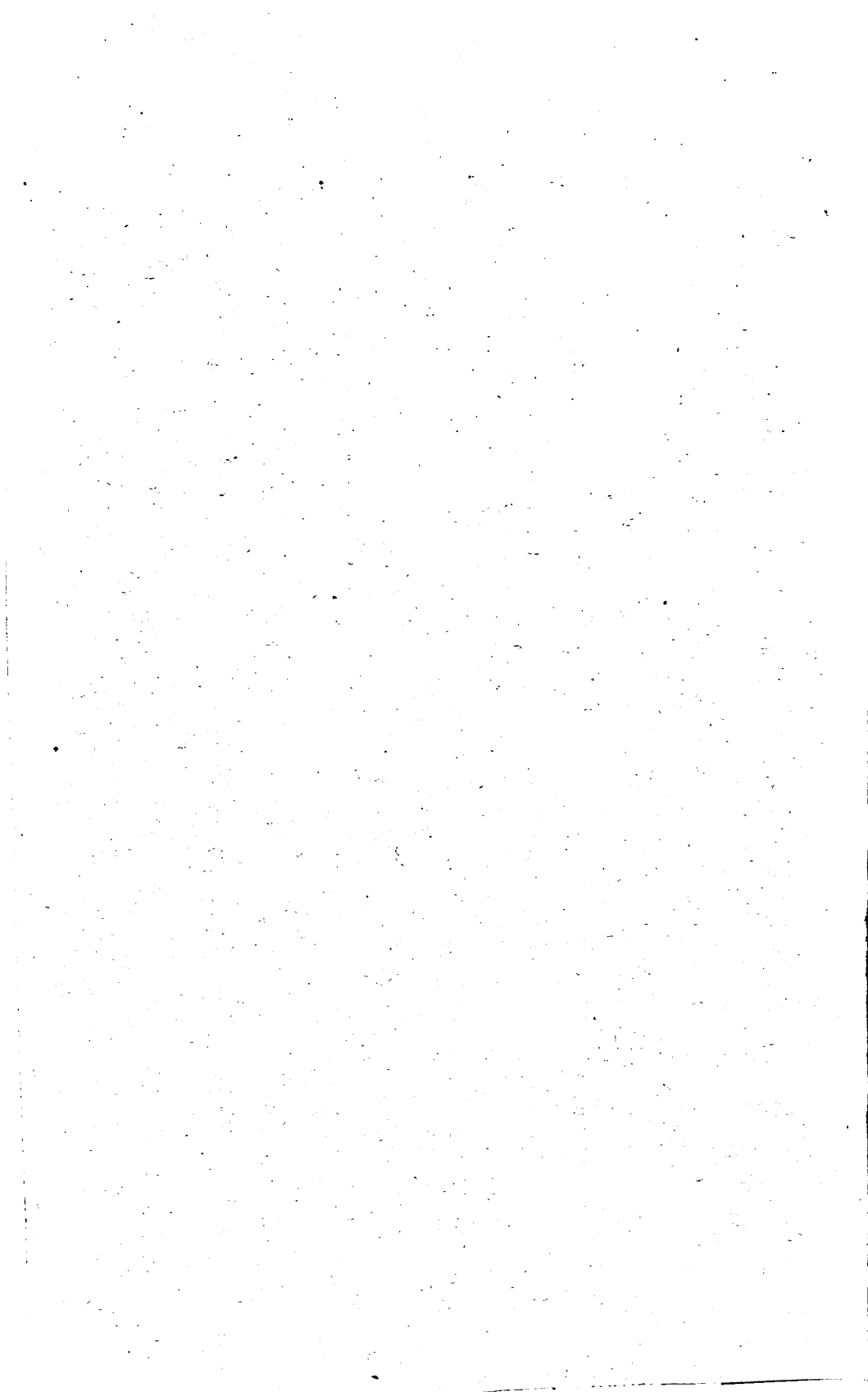
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**PRESENTED BY
THE SOCIETY**

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1981





REPORT

OF THE

Missouri State Horticultural Society

FOR THE YEAR 1883.

BEING A REPORT OF THE WORKINGS OF THE SOCIETY FOR
THE YEAR, TOGETHER WITH THE PAPERS AND
DISCUSSIONS AT THE 26TH ANNUAL
MEETING, HELD AT

CARTHAGE, MO., DEC. 11, 12, 13, 1883.

CONTAINING ALSO A CONSTITUTION FOR THE WORKING OF
LOCAL OR COUNTY HORTICULTURAL SOCIETIES, AND
"SECRETARY'S BUDGET," BEING CHOICE
CLIPPINGS FROM THE BEST HORTI-
CULTURAL PAPERS.

L. A. GOODMAN, SEC'Y, WESTPORT, MO.

JEFFERSON CITY:
STATE JOURNAL CO., STATE PRINTERS.
1884.



OFFICERS FOR THE YEAR 1883.

President,

PROF. S. M. TRACY, COLUMBIA.

Vice-President,

C. M. STARK, LOUISIANA.

Secretary,

L. A. GOODMAN, WESTPORT.

Treasurer,

J. C. EVANS, HARLEM.

OFFICERS ELECTED FOR THE YEAR 1884.

President,

PROF. S. M. TRACY, COLUMBIA.

Vice-President,

A. W. ST. JOHN, CARTHAGE.

Secretary,

L. A. GOODMAN, WESTPORT.

Treasurer,

J. C. EVANS, HARLEM.

PREFACE.

Every one expects a preface. It has been our aim in preparing this book to prepare it in such a way that at any leisure time you may take it up and read something that will be of instruction to you in your horticultural work. I trust it will be so.

L. A. GOODMAN.

Secretary

LIST OF MEMBERS.

S. M. Tracy.....	Columbia.
A. W. St. John.....	Carthage.
L. A. Goodman.....	Westport.
J. C. Evans.....	Harlem.
W. G. Gano.....	Parkville.
G. F. Espenlaub.....	Rosedale, Kas.
Frank Holsinger.....	“ “
Z. S. Ragan.....	Independence.
J. C. Blair.....	Kansas City.
Wm. Kauffman.....	“ “
W. M. Hopkins.....	“ “
G. W. Hopkins.....	“ “
C. B. Warren.....	“ “
J. C. Dickinson.....	“ “
S. W. Salisbury.....	“ “
S. C. Palmer.....	“ “
H. T. Hovelman.....	“ “
D. F. Emry.....	Carthage.
E. R. Morerord.....	Schell City.
F. Wellhouse.....	Fairmount, Kas.
E. J. Holman.....	Leavenworth, Kas.
E. Taylor.....	Edwardsville, Kas.
P. Underwood.....	Lawrence, Kas.
C. M. Stark.....	Louisiana.
J. B. Schlichter.....	Sterling, Kas.
J. W. McIntyre.....	Fulton.
J. H. Monsese.....	Beaman.
J. N. Meniffee.....	Forest City.
Jacob Faith.....	Montevallo.
H. Bruihl.....	Appleton City.
Green Bros.....	Macon City.
Hon. John J. Cockrell.....	Warrensburg.
Phil. Pfeiffer.....	Sedalia.
Chas. Patterson.....	Kirksville.
C. G. Comstock.....	Albany.
J. M. Pretzinger.....	Clinton.
W. H. Thomas.....	LaGrange.
J. K. Glassford.....	Carthage.
J. A. Durkes.....	Weston.
Jas. Hanley.....	Shelbina.
A. H. Gilkerson.....	Warrensburg.
D. S. Holman.....	Springfield.
F. H. King.....	Montevallo.
E. Liston.....	Virgil City.
A. Ingraham.....	Nevada.
H. W. Maxwell.....	Carthage.
H. Shepley.....	Nevada.
Walter Scott.....	Montevallo.
A. Ambrose.....	Nevada.
F. Griffith.....	Carthage.
F. F. Fine.....	Springfield.

L. C. Amsden.....	Carthage.
C. A. Emry.....	"
D. L. Emry.....	"
Z. T. Russell.....	"
J. W. Baird.....	"
Dr. A. Goslin.....	Oregon.
Hon. Ira S. Haseltine.....	Dorchester.
S. I. Haseltine.....	"
W. J. Sieber.....	Carthage.
P. Finn.....	"
H. B. Francis.....	Mulberry.
J. Ames.....	Carthage.
J. B. Wild.....	Sarcoxie.
H. W. Wild.....	"
Powell Jackson.....	Carthage.
Bennett Hall.....	"
W. C. Downs.....	"
Nicolas Sibert.....	"
Z. Freeman.....	Joplin.
Kos. Elliott.....	Oronogo.
C. W. Murtfeldt.....	Kirkwood.
Sinnock & Co.....	Edina.
Isidor Bush.....	St. Louis.
J. T. Stewart.....	Blackburn.
F. A. Hazen.....	Dudenville.
Jas. Gamble.....	Brookfield.
Jas. W. Turner.....	"
J. K. Cravens.....	Kansas City.
R. J. Lewis.....	Westport.

LADY MEMBERS.

Mrs. Dr. Galbraith.....	Carthage.
Mrs. Geo. Allison.....	Johnson City.
Mrs. Lou. Marker.....	Carthage.
Mrs. L. A. Goodman.....	Westport.
Mrs. W. G. Gano.....	Parkville.
Mrs. Frank Holsinger.....	Rosedale, Kas.
Mrs. G. F. Espenlaub.....	" "
Mrs. C. A. Emry.....	Carthage.
Mrs. J. K. Cravens.....	Kansas City.
Mrs. R. J. Lewis.....	Westport.
Miss Mary Murtfeldt.....	Kirkwood.
Miss Mary Evans.....	Harlem.



STANDING COMMITTEES.

Orchards,

W. G. GANO, PARKVILLE; CHAS. PATTERSON, KIRKSVILLE; D. S. HOLMAN, SPRINGFIELD.

Vineyards,

GEO. MEISSNER, BUSHBURG; H. JAEGER, NEOSHO; C. TEUBNER, COLUMBIA.

Small Fruits,

S. MILLER, BLUFTON; WM. HOPKINS, KANSAS CITY; JACOB FAITH, MONTEVALLO.

Stone Fruits,

D. F. EMMY, CARTHAGE; E. H. HYNES, WEST PLAINS; J. M. PRETZINGER, CLINTON.

Vegetables,

C. B. WARREN, KANSAS CITY; F. H. KING, MONTEVALLO; J. N. MENIFEE, FOREST CITY.

Flowers,

ROBT. S. BROWN, KANSAS CITY; H. MICHEL, ST. LOUIS; MRS. GEO. ALLISON, JOHNSON CITY.

Ornamentals,

Z. S. RAGAN, INDEPENDENCE; C. W. MURTFELDT, KIRKWOOD; J. H. MONSESE, BEAMAN.

Entymology,

A. GOSLIN, OREGON; H. SHEPLEY, NEVADA; MISS M. MURTFELDT, KIRKWOOD.

Botany,

B. T. GALLOWAY, COLUMBIA; G. C. BROADHEAD, PLEASANT HILL; MRS. LOU MARKER, CARTHAGE.

Nomenclature,

J. C. EVANS, HARLEM; J. B. WILD, SARCOXIE; F. F. FINE, SPRINGFIELD.

New Fruits,

J. C. BLAIR, KANSAS CITY; A. H. GILKERSON, WARRENSBURG; A. INGRAHAM, NEVADA.

CONSTITUTION

OF THE

Missouri State Horticultural Society.

ARTICLE I. This association shall be known as the Missouri State Horticultural Society. Its object shall be the promotion of horticulture in all its branches.

ART. II. Any person may become a member of this society upon the payment of one dollar, and membership shall continue on the payment of one dollar annually. The payment of ten dollars at one time shall constitute a person a life member, and honorary members may be elected at any regular meeting of the society. And any lady may become a member by giving her name to the Secretary.

ART. III. The officers of this society shall consist of a President, Vice-President, a Secretary and a Treasurer, who shall be elected by ballot at each regular meeting, and whose terms of office shall begin on the first day of March following their election.

ART. IV. The elective officers of the society shall constitute an Executive Committee, at any meeting of which a majority of the members shall have power to transact business. The other duties of the officers shall be such as usually pertain to the same officers in similar organizations.

ART. V. The regular meetings of this society, shall be held annually on the third Tuesday of January, except when otherwise ordered by the Executive Committee. Special meetings of the society may be called by the Executive Committee, and meetings of the committee, by the President and Secretary.

ART. VI. As soon after each regular annual meeting as possible, the President shall appoint the following Standing Committees; and they shall be required to give a report in writing, under their respective heads, at the annual and semi-annual meetings of the society of what transpires during the year of interest to the society: Orchards, Vineyards, Stone Fruits, Small Fruits, Vegetables, Flowers, Ornamentals, Entymology, Ornithology, Botany, Nomenclature, New Fruits.

ART. VII. This constitution may be amended by a two-thirds vote of the members present at any regular meeting.

HOW TO ORGANIZE A
HORTICULTURAL SOCIETY,
ALSO THE
CONSTITUTION FOR A LOCAL ORGANIZATION.

Any one much interested on this subject of Horticulture can organize a society if he will speak to five or six different persons who are known to be prominent in this matter. Tell them that there ought to be a society in your county, and as it is such a good fruit country, ask them if they do not want to help organize one. You will hardly meet a refusal, but will be met with the remark "that they do not believe there is interest enough in your county to keep one up." Never mind this, but make an appointment to meet in some office in town on some Saturday. If you can get five to come together, organize and elect officers. Make the meetings regular each month and on the same Saturday. Some lawyer will let you have the use of his room to hold the meetings. Have the meeting in the best town in the county even if you have to go some distance to meet there. Talk this up until the next meeting, and let each one promise to bring another. Do not expect to have everyone belong, for they will not. Hold six winter meetings (November to April) in the city or village, and at the March or April meeting, select the places to hold the six summer meetings (May to October) at the homes of the members. Make this a pic-nic dinner, meeting about 10 o'clock, and after the dinner hold the meeting and discussion; offer a few premiums for fruits and flowers, and have a general good time. Do not be afraid of a dollar or two, but use as much judgment in this matter as you would in any business of your own, and you will succeed. Talk to your neighbors about it if they are interested in fruit growing, if not, choose those who are so interested. They will not be much help to you if they are not fruit growers. Make out a programme for the year, choosing one or two for an essay at each meeting. When the reports of the standing committees

are made, have it done in writing, and have a report at every meeting. You cannot expect to have everything work in complete order at first, and do not get discouraged if you find trouble in the start. Take your wives with you and make a good social time also. If I can be of use to you at any time, I will come and visit you if it is possible for me to get away. I will try and bring some one with me also to help along the good work.

L. A. GOODMAN,
State Secretary.

CONSTITUTION.

ARTICLE I. This association shall be known as the _____ Horticultural Society.

ART. II. All persons interested in the subject of Horticulture may become members of this society by signing the Constitution and paying annually to the treasurer the sum of one dollar: *And provided further*, That any person paying at one time the sum of ten dollars to the treasurer, may become a life member, and thereafter exempt from annual dues: *Provided further*, That all ladies may become members by signing the Constitution without the payment of one dollar.

ART. III. SEC. 1. The officers of this society shall consist of a President, Vice-President, Secretary, Treasurer, and Executive Committee consisting of five, of which the President and Vice-President shall be *ex-officio* members.

SEC. 2. The President shall exercise a general superintendence of the affairs of the society; preside at all meetings of the society; appoint all committees unless otherwise provided; draw all orders on the Treasurer as directed by the society, call special meetings of society or Executive Committee when deemed necessary; he shall be *ex-officio* president of the Executive Committee.

SEC. 3. The Vice-President shall assist the President, and in his absence perform his duties, and be *ex-officio* a member of the Executive Committee.

SEC. 4. The Treasurer shall receive all moneys belonging to the society; shall keep a just and true account of the same, from

what source received, and pay out the same upon the order of the President, countersigned by the Secretary. At the meeting of the society on the——Saturday in December in each year, (or oftener if required by the Executive Committee) he shall make a full and complete report of all receipts and disbursements, and at the expiration of his term of office, turn over all books, papers, and all money or other property belonging to the society, to his successor in office. The Treasurer, before entering on the discharge of the duties of his office, shall enter into a bond with sufficient security, to be approved by the President of the society for its use, in the sum of———conditioned for the faithful performance of the duties required of him in this section.

SEC. 5. The Secretary shall keep a full and complete minute of each meeting of the society, and the proceedings of the Executive Committee. He shall receive and safely keep all books, periodicals, stationary, seeds, fruits and other like property of the society subject to its order; shall correspond as may be necessary with all persons or societies as the welfare of the society may demand. He shall report all the proceedings of the Executive Committee to the society at its first meeting thereafter. He shall countersign all orders drawn upon the Treasurer by the President under the direction of the society, and have the care and custody of the seal of the society.

SEC. 6. The Executive Committee shall assist and advise the officers in the discharge of their duties; prepare all premium lists; make all necessary arrangements for holding and conducting any and all such fairs as the society may determine to hold, and such exhibitions of fruit as the society may determine to make, and exercise a general supervision over the same, and generally to provide for the arrangements and business of the society.

ART. IV. The officers of this society shall be elected by ballot from among its members for the term of one year. The annual election shall be held at the regular meeting of the society on the——Saturday in December, where the general business of the society shall be transacted. Vacancies may be filled at any regular meeting of the society.

ART. V. The regular meeting of this society shall be held on the——Saturday of each month, at 1 o'clock P. M., at such places as the society may select, at———: *Provided*, That the meetings in the months of May, June, July, August, September and October of each year may, by a vote of the society, be held at the residence of any of the members outside of the city.

ART. VI. Executive Committee may provide: (1st.) For the payment of premiums to members of the society for the best display of fruit, flowers or vegetables made at any regular meeting of the society; (2d.) For essays on any subject of interest to the society, and arrangement of programme for the year; (3d.) And for determining the places for each meeting of the society for the months of May to October inclusive.

ART. VII. Five members of the society shall constitute a quorum at any meeting, and three members of the Executive Committee shall be authorized to transact business at any meeting of the committee duly called. Special meetings of the society or Executive Committee may be held by order of the President or any three of the committee on one week's notice to all members of the society or board (as the case may be), given personally, or through the post-office. Adjourned meetings, may be held from time to time, as the society may determine.

ART. VIII. The funds of this society shall not be appropriated to any purpose, without a vote of a majority of the members present at any regular meeting of the society.

ART. IX. This society shall have the following standing committees, which shall be appointed by the President at the January meeting in each year: Small Fruits, Stone Fruits, Orchards, Vineyards, Vegetables, Flowers, Ornamentals, Entymology, Botany, to each of which shall be referred all matters relating to those particular subjects. Each of said committees shall consist of one to three members.

ART. X. This Constitution may be amended by a two-thirds' vote of all the members of the society, at any regular meeting: *Provided*, That notice of the intentioned amendment shall have been given at least one month prior to any action taken thereon.

ART. XI. The meetings of this society, shall be governed by the parliamentary rules usual for deliberative bodies.

PROCEEDINGS
OF THE
TWENTY-SIXTH ANNUAL MEETING
OF THE
Missouri State Horticultural Society,
HELD AT CARTHAGE, DECEMBER 11th-13th, 1883

TUESDAY AFTERNOON.

The 26th annual meeting of the State society was held at Carthage, December 11-13, upon the invitation of the Jasper County Horticultural Society.

Most of the members reached Carthage December 11th, at 10 A. M., and after dinner a portion of the afternoon was spent in arranging fruits for the meeting, and getting acquainted with the fruit-growers of Southwest Missouri, a goodly number being present.

About 3 P. M., the President not being present, the Secretary called the meeting to order, and read the following letter from the President:

AGRICULTURAL COLLEGE, }
COLUMBIA, Mo., Dec. 10, 1883. }

L. A. GOODMAN:

At the last moment I find myself unable to attend the meeting. I have three children sick with the scarlet fever, and one of them is very low, so of course I cannot think of coming. You will give my excuse to the society, and express my regrets at not being present. It is the first meeting I have missed since coming to the State, eleven years ago. Hope you will have a good meeting. I will send my address.

Yours,

S. M. TRACY,
President.

The following letter was also read from the Vice-President, C. M. Stark:

L. A. GOODMAN, Esq., *Westport, Mo.*:

DEAR SIR: Mr. C. M. Stark is out of the city at present, and will start for Colorado to spend the winter, in a few days.

Yours truly,
STARK & CO.,
B.

P. S.—Stark regrets very much, that he cannot be present at the meeting, on account of his health.

Truly,
S. & CO.

The Secretary spoke a few words as follows:

We meet here under peculiar auspices, and I am sorry to read this necessary absence of our President and Vice-President. Our worthy Treasurer, J. C. Evans, was called to Sedalia to attend a State meeting of the grange, and will be absent until to-morrow.

Meeting in this portion of the State is a new thing, and we come here glad that we have such a great portion of the State that can always have a crop of peaches, to say nothing of other fruits. We are glad to meet you fruit-growers of the Southwest, and hope that this meeting will be of benefit to us all. You are enthusiastic in this matter, and we are glad to meet you. I hope we may begin a work here at this meeting, that will be felt in our State for good.

Our President being absent, it will be necessary to choose a President *pro tem.* to take charge of us and keep us in working order.

On motion, C. W. Murtfeldt was chosen President *pro tem.* unanimously.

On taking the chair he expressed his surprise at being called to that position, as he came as a looker-on and a worker, but under the circumstances he would do his best to serve the society, as he was always ready for any place. He referred to the old time when the society used to meet together, and this beautiful and fruit-growing country was not known as a fruit country at all. Deer and turkey were the best game then in Southwest Missouri, and now we can scarcely find a place for them to lodge. All along the railroad we saw the country well settled with beautiful homes, splendid farms, fine stock and a grand lot of fruit trees planted everywhere, and this Southwest

Missouri is fast becoming noted as an excellent fruit country, and even now thousands of dollars worth of fruit is sold each year from every county.

Farther than this I will not go at present, and will only thank you for the confidence placed in me, as I consider it an honor to hold the position you now give me.

The Secretary then read the following letter from Prof. C. V. Riley:

UNITED STATES DEPARTEENT OF AGRICULTURE, }
DIVISION OF ENTOMOLOGY. }
WASHINGTON, NOV. 30, 1883. }

L. A. GOODMAN, *Secretary Missouri State Horticultural Society, Westport, Mo.:*

DEAR SIR: As the time approaches for the holding of the annual meeting of your society, I find that the pressure of work here will not permit me to be with you, much as I would like to meet once more with so many horticultural friends. Please express my regrets to the society when convened, at my inability to be present, and rest assured that I still hope to attend some of your future meetings.

Yours sincerely,

C. V. RILEY.

The President then spoke of the valuable services of Prof. C. V. Riley and what a loss it was to the State when it refused to longer pay an entomologist, and Prof. Riley went to Washington.

He said that Prof. Riley was the first to discover that the vines of the old country could be saved from the phyloxera by grafting their varieties on our hardy native vines, and from that has been the salvation of the vineyards of Europe.

The work that he is now doing is one of benefit to the whole country, and every year we find his services of more and more value to us all as horticulturists and agriculturists.

What further work he can accomplish will only be limited by his health and strength.

Also one from Prof. S. A. Forbes. He is State Entomologist of Illinois, and two years ago he met with the society at the State Agricultural College, and gave us a very valuable paper on "Birds"—good and bad.

I wrote him asking him to give us something more on the subject, as it was one of vital importance to horticulturists, and received the following in reply:

OFFICE OF STATE ENTOMOLOGIST, NORMAL, ILL., }
November 11th. 1883. }

MR. L. A. GOODMAN:

DEAR SIR: I would be very glad to meet again with the Missouri State Horticultural Society, and especially glad to help them, as well as I could, towards a conclusion respecting the uses of birds; but it will be quite impossible for me to leave home for any purpose at the time of your meeting, as I shall be extremely busy with the preparation of my report as State Entomologist.

I shall have to do two or three months' work on the subject of economic ornithology next year, and hope then to be able to make some contributions of interest to a knowledge of that matter.

Very truly yours,

S. A. FORBES.

Next was a letter from Chas. Downing.

I wrote him asking for something for our meeting, and received in reply:

NEWBURG, N. Y., Nov. 10, 1883.

L. A. GOODMAN:

DEAR SIR—Yours of the 6th came to hand, and in reply would say, that it would give me pleasure to comply with your request if my health would permit, but am now in my eighty-second year and not able to do much. Very respectfully,

CHAS. DOWNING.

When the letter from Mr. Chas. Downing was read, Mr. Murtfeldt said:

This is a very agreeable surprise to me, for I did not expect to hear from my venerable friend at this time. I think that Mr. Downing leads a most ideal life for one of his age. His devotion to horticulture brings him a number of packages per express every morning. He writes at a flat desk. The horticultural authorities, to-wit: Downing, Warder, Thomas and others are at hand. After opening a package he takes out a fruit, looks at it closely, compares it with the descriptions as to color, calix, size and length of stem, etc. He then cuts it in two sections, dries one on the blotter, runs the pencil around the outline, marks the size of core, number of seeds and again compares all with the books. Then he takes the fruit critically, once or twice, again compares, and then makes such notes as will still better describe the apple or pear. This process varies of course with different fruits. His modesty is as great as his knowledge, for he still publishes the work in the name of his talented and deeply lamented brother, A. J. Downing. For a man of his years, Mr. Chas. Downing is a most extraordinary man, still devoted

to the passion of his life, Horticulture. Let us hope that he may yet be spared to us for some time.

The following was read from Prof. Popenoe:

KANSAS STATE AGRICULTURAL COLLEGE,
DEPARTMENT OF HORTICULTURE AND ENTOMOLOGY, }
MANHATTAN, KANSAS, November 19, 1883.

L. A. GOODMAN, Esq., *Secretary Missouri State Horticultural Society,*
Westport, Mo.:

DEAR SIR—Your favor of the 12th is before me, requesting a paper at your meeting, Dec. 11th–13th.

I regret that previous engagements of my time and presence will force me to decline, although I should take great pleasure in meeting the Missouri brethren.

However, I am obliged to attend one of our series of Farmers' Institutes in Osborne county on that date, and of course, must decline all other engagements.

Yours very truly,

E. A. POPENOE.

From I. Bush:

BUSHBERG, JEFFERSON Co. Mo., Dec. 5, 1883.

L. A. GOODMAN, Esq., *Westport:*

DEAR SIR—I regret to be unable to be with you at the meeting of our State Horticultural Society, nor could I find time to prepare a paper for it—having just been engaged at the completion and proof-reading of the Bushberg catalogue, of which I send you a copy (Library Edition) as an humble offering for the Society's Horticultural Library, or if it has none, for such library as it may deem proper. Your President, Mr. Tracy, will pay you my membership fee.

Very respectfully,

ISIDOR BUSH.

I wrote Prof. W. J. Beal, of Lansing, Mich., about something on insects, and received answer from him that it had been referred to Prof. A. J. Cook. Afterwards a letter to him failed to receive any response, much to my disappointment.

Next a letter from Prof. J. L. Budd of Ames, Iowa, was read in answer to a letter asking for something of interest to us as horticulturists:

IOWA AGRICULTURAL COLLEGE. }
 AMES, IOWA, NOV. 6, 1883. }

I have little time for essay writing except on topics of special interest for the northern prairies.

The bulletin I send gives an idea of my special studies.

Yours,

J. L. BUDD.

The bulletin referred to, is a report of his stay in Russia, studying the various hardy apples there grown. Being of invaluable benefit to our northern prairies, and to which I shall have occasion to refer later.

From Parker Earle, president of Mississippi Valley Horticultural Society:

COBDEN, ILL., NOV. 8, 1883.

FRIEND GOODMAN:

Your favor of the 3d came on time, but I have been absent a little—hence delay in replying.

Our meeting has been appointed for Kansas City, Jan. 22-25. And we want a good small hall where it is known from much experience that people can hear each other talk. You and Evans can see to all that. And we want the best rates we can get at your best hotel, and I hope we can all be together there. We are working up programme and hope to have it out in good time.

I should like very much to attend your state meeting at Carthage, but I believe it is impracticable. I think our state meeting is the same week, and I have to be there; and besides I am not very well—have not been since going to Philadelphia—and I hardly feel equal to assigning any more obligations than I have at present.

Truly yours,

PARKER EARLE.

This closed the communications and the remainder of the afternoon was spent in arranging the fruits and getting acquainted.

Before the evening session the whole of the fruits were nicely arranged, and a fine display of apples were they. From more than a half dozen counties there was a splendid show, and it was one of the best teachers we had during the meeting.

The programme was read for the evening meeting.

1. New Strawberries—Samuel Miller Bluffton, Mo. Read by A. W. St. John, Carthage, Mo.
2. Berries—Jacob Faith, Montevallo, Mo.

3. Comparative value of small Fruits—G. F. Espenlaub, Rose-dale, Kas.

4. Discussion.

Adjourned to meet at 7 o'clock, p. m.

The following is president S. M. Tracy's address.

HORTICULTURE IN THE AGRICULTURAL COLLEGE.

Members of the Missouri State Horticultural Society:

As we are met to-day to talk of what our friends, our neighbors and we ourselves are learning and accomplishing in horticultural work, it may be of interest to know what is being done for its advancement by the Agricultural Colleges—the institutions founded and endowed by the general government for the advancement of agriculture—and so for the advancement of agriculture's highest type—the cultivation of fruits and flowers.

By universal consent, horticulture, in its various forms, is regarded as the most intricate work with which the agriculturist has to do. For its successful issue unceasing care, untiring watchfulness, delicate manipulations and the highest intelligence as well as constant industry are indispensable, and any man who is a successful fruit-grower will also be a successful farmer. We need not expect to find a community of successful agriculturists without finding also that its leading and most useful men are successful horticulturists.

In nearly every western Agricultural College we find a horticultural department, usually quite distinct from the farm department, both in class-room instruction and in field work. The following outlines have been obtained by correspondence with the parties in charge of the work in the different colleges.

Michigan, which is usually regarded as being the most advanced college in the country, has a special instructor in horticulture who has no other duties. Two-thirds of the year is given to class-room work; three hours field work daily in the orchard and garden is required from students during the junior year. More attention however is given to botanical and technical work than to fruit-growing. Almost nothing has been attempted in the way of experimental work or to the testing of new varieties of fruits, more attention being given to vegetable growing than to any other branch of horticulture. The department is liberally supported by the college, the annual expenses in excess of receipts being about \$4,500.

In Wisconsin it is but three years since the agricultural department of the university went into active operation, and but little has been accomplished as yet. A letter from Prof. Trelease says:

"Our horticultural instruction is almost entirely theoretical yet. I have to work in orchard and vineyard work as soon as I can get to it. Our agricultural students spend one term on vegetable histology and physiology in the laboratory, in their junior year, and read the botanical part of Darwin's *Animals and Plants*, and Lindley's *Horticulture*. Lectures are given on related subjects in the whole botanical course. They have one term (three hours per week) of cross-fertilization in laboratory and field, and one term (two hours per week) of economic entomology, mostly in the lecture room."

Iowa has always made fruit growing a prominent part of her college work, the introduction of new and "iron-clad" varieties being a leading feature—Prof. Budd writes:

"The Freshman class has two recitations per week in second term.

The Sophomore the same.

The Junior one recitation per week the first half of first term and five per week for last half. The second term three recitations per week through the term.

Work is not imperatively required, but special students and those taking the agricultural course, do about all the work of the department and are paid 10 cents per hour.

We use about fifty acres in forestry, orchard, nursery, gardens, etc.

We have about 400 varieties of fruits.

Expenses of department for two years about \$1,000, mostly paid by receipts from the different lines of work.

We have an appropriation from the interest fund of about \$1,000 per year and we have \$750.00 direct from the State for experimental purposes."

Prof. Budd has been especially interested in the introduction of new fruits from Northern Europe and Asia, and two years ago made an extensive tour through those countries in search of varieties suited to the hot, dry summers and intensely cold winters of Iowa. By far, the larger proportion of our fruits have come to us, more or less, directly from England, France and Germany—countries where the winters are mild and the summers cool and moist. Prof. Budd believes that by securing varieties which have been grown for generations in a climate more like our own, we may reasonably

expect to secure sorts whose inherited constitution will enable them to withstand the extremes of our variable climate. Prof. Budd has kindly sent me a few peach cions, and trees grown from these cions, grafted into ordinary seedlings are now at your disposal.

Prof. Burrill states that the Illinois College has from six hundred to eight hundred varieties of apples, a dozen each of pears and cherries, twenty of grapes and twenty of small fruits. Four school terms are given to the study and practice of horticulture, the latter being required about half of the time. Exclusive of salaries the department is about self-sustaining. Prof. Burrill says in regard to this "We ought, however, to use much more to make the most of the work, especially in the way of experimentation. In the Illinois College, work with the microscope, a work of which horticulturists are just beginning to realize the importance, receives more attention than in any other western college."

The Kansas College is doing excellent work as is shown by the following from Prof. Popenoe who has charge of the horticultural work:

"The time given to Horticulture *in class-room work*, is fourteen weeks, occupying the entire fall term of the second year of the course. The course includes an outline of Horticultural theory and practice, following, in a general way, in the earlier weeks, the "Fruit Garden" of P. Barry; supplementary to this work is a course of lectures upon the various topics of special importance to a Kansas Horticulturist not treated in Barry's work, and by two weeks' practice for boys and girls alike, in winter, work in the house grafting, making cuttings, etc."

"The young men of the second year of the course spend one hour daily for five weeks of the spring term, and of the third year, one hour daily for seven weeks of the fall term, in the practice of all the seasonable work in the orchard, nursery, and garden, and on the lawn. The intention is to make this work as thoroughly practical and instructive as may be under the circumstances. I may add, that students in such work receive therefor a reasonable compensation for work not specially instructive."

"As to the number of varieties, there are trees of topgrafts, now fruiting, of about 150 varieties, of apples in our orchard; of pears, we had a very large assortment, nearly complete in fact, but they have nearly succumbed to blight, and I should say not over twenty varieties now remain; of plums, cherries and apricots, we have sixteen varieties, including a few selected native plums; of peaches and nectarines, fifty varieties; of strawberries, thirty-two; of rasp-

berries, twenty-two; of blackberries, six; of currants and gooseberries, ten; of grapes, about fifty varieties."

"We have also, all told, about one hundred species and varieties of hardy forest and ornamental trees and shrubs in the arboretum and on the grounds. In all these classes the number will be considerably increased the present season."

"The entire amount of ground in cultivation, under my charge, is about fifty-five acres, including the forest and ornamental tree plantings of about thirty acres, but not including the lawns of about twenty acres."

"The leading features of the work are: (a) Experimental work relating now to the testing of varieties and modes of culture, to methods of propagation, to the adaptability of new shrubs and trees, to lawns, forests and fruit plantations in Kansas, and to the production of worthy new sorts in some of the small fruits by crossing, etc.; (b) instruction (and practice) in theoretical and practical Horticulture, including the propagation, planting and culture of fruit and ornamental plants; the formation and treatment of forest plantations, general gardening, etc. In the studies closely allied, i. e., botany and entomology, the economic phases are put to the front, and the close relation of science and practice is insisted upon."

"The expenses of the department, not including the professor's salary, exceeded the income in 1881-2, \$663.13; in 1882-3, \$579.56. I may say that no effort is made to make the department self-supporting, but simply to make the best use of what we have. The income of the department has been chiefly derived from the sale of fruit; in a small degree from the sale of surplus nursery products. As one of our Board of Regents remarked to me; 'You cannot expect to make the department self-supporting and do your proper work.'"

The Mississippi College is young, but is in most excellent hands, and is making a very promising beginning. Prof. Colmant, in charge of the Horticultural Department, says:

"We teach Horticulture to the junior class five hours per week during one term of three months. I am recommending more time for Horticulture. About one-third of our students are required to work daily from two to three hours in the garden, orchards, nurseries and improvements of the grounds. For this work they receive from six to eight cents per hour.

About eighty acres have been set aside for the Department of Horticulture. Of this about twenty acres are planted in orchards, vineyards and nurseries; four acres in strawberries; fifteen acres in

vegetables, and the balance will be planted in orchards and vineyards during the next year or two.

We grow about one hundred and thirty varieties of apples, pears, peaches and plums, about sixty varieties of grapes and fifteen varieties of strawberries.

The time in the class-room is mostly employed in teaching market gardening of vegetables and fruits. We raise vegetables for the mess hall, officers of the college, and also sell to outsiders.

An inventory taken by the board of appraisers, shows that the Horticultural Department has made expenses.

The Department of Horticulture commenced September, 20, 1882, with a capital of \$4,000.

I have not yet had a chance for experimental work, which in our State is needed so much. Our lands are so broken, and at present so unsuited to successful Horticulture, that progress is connected with many expenses. We had four consecutive months without rain last summer, and consequently have no fall and winter garden."

Of the work in the Missouri College I need speak but briefly. Class-room instruction extends through two years, including a year of botany and vegetable physiology, a half year of work with the microscope, with lectures on fruit-growing, forestry, market gardening, etc. Whenever possible these lectures are made practical, by work in the orchard and greenhouse, budding, grafting, making cuttings, transplanting, etc., in fact, the student is required to have actual practice in all ordinary Horticultural work. The equipment of the department consists of a fair amount of greenhouse room, and forty acres of land, about one-half of which is devoted to fruit-growing, and the other half to nursery and vegetable garden. In the orchard and garden we have now seventy-eight varieties of apples; thirty-two of peaches; fifty-six of pears; seven of cherries; six of plums; fifteen of raspberries; three of blackberries; thirty-two of strawberries, and seventy-six of grapes. These fruits are mostly of the newer varieties, and it is largely through the arrangement made with this society, that the college has such a collection. In the nursery, ordinary varieties of fruits are propagated for sale and the newer sorts order the arrangement with this society.

In the vegetable garden it is the aim of the college to carefully test and report on all novelties. A report of the experimental work of the past year will be presented before the close of this meeting.

The work of the Horticultural Department is by the action of the curators of the university required to be self-sustaining, and is so.

Of course every fruit-grower will realize that with no assistance even for superintendence, it is impossible for the department to do much more than to keep the young orchards in good condition and pay for the material and labor incident to giving instruction to the classes.

And now comes that oft repeated question, "What work *ought* the Agricultural Colleges do? Should the college conduct a model fruit farm and garden where horticulturists may find a perfect plan carried out exactly in all its details and from which every one should copy, or should the college conduct its operations solely with a view to money making, or should it be all experimental work, or should all the field operations be conducted with a purpose only for giving instruction?" This question is asked in almost every meeting where Agricultural Colleges are discussed and a definite answer I have never heard. So much depends on the means at the disposal of the college, the personal tastes, character and education of the man in charge of the work, and the demands of the different localities that it is impossible to give a categorical answer to such a question. The work of the Agricultural College cannot be laid out for all time by a National Convention, but must be decided by the demands of the moment and the means available for the work demanded. Missouri is, I believe, the first State to arrange for a unity of work between the College and the State Horticultural Society. Such a union as we have here seems in every way desirable, and when the work is wisely planned and carefully carried out, cannot fail to be to the very great advantage of both.

In regard to the work of the Society during the past year, you will be informed by the Secretary. The Secretary has inaugurated the work of collecting Statistics and publishing periodical reports in which he should have the active support of every member of the Society. With the little assistance which he asks from each of us, he can make his work of the greatest value, not only to members of the Society, but to the State at large, and I urgently request your hearty co-operation in his labors.

In February last the delegates appointed for the purpose, at your last annual meeting, together with other members of the Society, attended the meeting of the Mississippi Valley Horticultural Society in New Orleans. That Society is to meet in Kansas City in January next and I know that you will gladly welcome it back to the State of its birth.

The Horticultural Department of the New Orleans Cotton Centennial Exhibition has been most magnificently provided for, and I suggest that this Society take immediate steps toward arranging for an exhibit of fruits at that Exhibition.

At the meeting of the American Pomological Society in September last, President Wilder spoke strongly and wisely upon the naming of new varieties of fruits. The matter is one which is becoming yearly more important, and it may be well for this Society to take some action. A copy of President Wilder's remarks on the subject is on the Secretary's table.

I cannot close these remarks without speaking of the loss which we have all sustained in the loss of our friend and fellow-worker, James A. Storm. Mr. Storm became a member of our Society at one of our first meetings, and several years ago became a life member. He was one of our most active and energetic workers, always a large exhibitor and did perhaps more than any other man to advance the fruit growing interests of Northwest Missouri. Like our valued friend Muench he died with the harness on, his last work being the preparation of the paper which he sent to our last annual meeting.

TUESDAY EVENING.

Meeting called to order by the Chairman, C. W. Murtfeldt, and the regular order of business was taken up.

The Chairman said that the whole evening would be given to small fruits, and no discussion would be allowed until the essays were read, and then every one was invited to take part in it, ask any question he chose, and give any information he may have for the benefit of the meeting.

NEW STRAWBERRIES.

BY SAMUEL MILLER, BLUFTON, MO.

L. A. GOODMAN, *Secretary Missouri Horticultural Society:*

This fruit, which not very long ago was only to be found among a few of the most wealthy people, has become a universal favorite, and is within the reach of almost every one, rich or poor. In fact it is of National importance, and is an article of Commerce.

Each season we read of the large numbers of car-loads of strawberries shipped from certain places, where twenty-five years ago, there was not a single patch of half an acre. This being the case, it is the desire of every one about to engage in growing them

to learn the best mode of doing so. I have not grown them by the acre as many others have, and it may seem presumptuous in me to offer instructions; yet I have raised as many, to the space of ground they occupied, as any account that has come under my notice. In one instance they were the Windsor Chief, in a matted bed; and the other was the Daisy, set out in July, and allowed to make all the runners they chose. The former was at the rate of 17,000 quarts to the acre, the latter near 13,000 quarts to the acre. I have never used any patent fertilizers, bone dust, super phosphates, etc. Only barn-yard manure, chip earth, leaf mold and wood ashes.

Plant rows three feet apart with plants one foot apart in the rows, and allow each plant to make from three to six runners, and keep them at that, and when freezing weather comes in the fall cover them slightly with straw, hay (that has no seed in it) or coarse stable manure. The latter is best of all if the land is not already rich. The winter rains and snows will carry all the strength into the ground, leaving as fine a mulch in the spring as can be desired for the berries to rest upon.

But before covering in the fall, the ground should be carefully hoed, so as to destroy all the biennials that are sure to have set; and which will be an annoyance to you the next season way before the the fruit is all gathered, and a trouble afterwards.

With these precautions and instructions, together with the selection of varieties suitable to the soils in which they are planted, as also the proper varieties to fertilize the pistilates, there is no such thing as fail, except when the elements conflict; then no crop is certain.

And as to the varieties of whose name is *Legion*, I will only name a few:

Chas. Downing, Captain Jack, Cumberland Triumph, Crescent Seedling and Windsor Chief can be relied upon with certainty.

Crystal City is the earliest; but if allowed to run in a matted bed in rich soil, will not bear well; poor soil and kept from running, it is productive and of fair size, of superior quality.

Of the new ones, Manchester and Big Bob pleased me greatly in fruit last June, but both blighted badly soon after, so that I have not a young plant to set out, while Daisy, between them, is a mass of dark green foliage, and bear nearly twice the fruit that either of the others did; in fact if left to run, it would crowd the others down.

Old Iron Clad, Piper, Jersey Queen, Ladies' Pine, Lenning's White, Howells, Walter, Mrs. Garfield, Magnum Bonum and Hart's Minnesota were added to my list last Spring, but of which I cannot

tell what they may do. Ladies' Pine is, I know, the finest flavored stawberry it has been my lot to meet with. And we must not omit the James Vick, which if in my hands alone, and a speculation in view, it might be immodest in me to puff up; but as it is now public property, and not high in price, no one need be afraid of losing by investing in it. The past summer, when all the rest suffered with the heat and drought more or less, the James Vick kept fresh and green. It is almost fire-proof, one might say, and not far from water-proof also, for I have pulled plants out of a pool of water where the river overflowed its banks, washed the mud off, dressed them and heeled in for a few weeks, and then set out in rows and they grew and flourished. It will bear as much fruit of good size and quality, as it is possible for a strawberry plant to do. When it becomes known properly, its grand-parent, the Wilson, will be consigned to its last resting place if we are not greatly mistaken.

If reasonably possible, I will be with you at Carthage in December; if not in body, surely in spirit, and hope you may have a pleasant and instructive meeting.

Yours fraternally,

SAMUEL MILLER.

The next paper was upon

BERRIES.

BY JACOB FAITH, MONTEVALLO, MO.

As a preface to my article I will make a few remarks. I believe it to be the duty of every father to make his home pleasant and beautiful, and in so doing he will make it profitable. If every farmer would beautify his home as he should do, his sons would take pleasure in staying at home and working on the farm instead of straying away, as is often the case. The importance and value of a good orchard and berry patch attached to the farm, can hardly be over estimated, making the farmer and his sons proud of their calling. It being a continued and increasing income, it is better and more reliable than a life insurance policy. If one-half of the money that farmers have paid to insurance companies had been spent in planting and cultivating an orchard, every farm in this country would be a minature paradise. And if the money that has been spent in building magnificent insurance offices, had been devoted to the establishment of well conducted agricultural schools, who could value the wealth and comfort in this country. In looking over the past hundred years we see that great improvements have been made in all kinds of machinery. Compare if you please the wooden mole-board

plow of a hundred years ago, with our improved gang and sulky plows of to-day. In that day, we dropped our corn by hand and covered it with a hoe, now we have our improved corn planter that will do the work of ten men; then we sowed our wheat by hand, cut it with a reap hook and threshed it with a flail. As a comparison, look at our improved wheat drills, self-binders and steam threshers. Compare our improved apples of to-day with the apples our fathers had to commence with. Compare our Red June for earliness and beauty; our Maiden Blush for size and beauty, our Ben Davis and Winesap for size, beauty and productiveness; our W. W. Pearmain for flavor and our Lawner and Shockley for long keepers. We see that we have made great advancement in improving the apple.

Compare the wild strawberry with the Early Washington for earliness and size; the Chas. Downing, Capt. Jack and Crescent Seedling for hardiness, size and great productiveness; and the Glendale for late, and we find that we have made a wonderful improvement in the strawberry.

If we compare the wild raspberry with the Centennial for earliness, the Mammoth Cluster for great productiveness and the Gregg for size, firmness and lateness, and the red varieties for flavor; we find that we have made considerable improvement in that line. Again take the wild blackberry and it cannot be compared with the Early Harvest for earliness; the Kittatinny for size and firmness; or the Snider for hardiness.

Strawberries are the earliest and most welcome as well as the most wholesome of all fruits, and if God has ever made a better fruit than the strawberry, I have yet to see it. It adapts itself to almost every soil and climate. Land that will produce good corn will produce strawberries, but in order to produce large crops of large sized berries, the ground should be subsoiled fifteen to eighteen inches deep and enriched with stable manure. The best soil for small fruit is of a light sandy or loamy nature that is easily worked in this climate. Set strawberries in April or May, October or November. If set in the fall, cover with old straw or prairie hay as soon as the ground commences to freeze, using just enough to hide the plants from view. This answers as a mulch to keep berries clean. I prefer plants from young berries in setting. I set plants twelve to eighteen inches apart in rows four feet apart. As soon as the crop is picked commence cultivating between the rows, in order to keep the weeds down. I prefer long rows in order that the work may more easily be accomplished by horse power. The cultivation should be kept up until the 20th of August, when oats may be sown to protect the

plants in winter. I allow the plants to form a matted row eighteen inches wide. I will give my experience with sixteen varieties; I give in form of a table for comparison, commencing with the earliest:

VARIETY.	Size.	Quality.	Firmness.	Strength of fruit stalk.	Vigor of plant.	Productiveness.	Evenness of size.
Early Washington.....	7	6½	6	4	4	8	8
Crystal City.....	6	3	5	8	10	4	4
Cinderella.....	6	8½	6½	8	5	6	6
Crescent Seedling.....	7½	6½	6	6	10	10	7
Chas. Downing.....	8	6½	6	5	8½	9	6
Wilson.....	6	5	7½	6	4	6	6
Miner's Prolific.....	7	6	5	5	6	6	5
Capt. Jack.....	6	6	5	9	10	8	7½
Lennings White.....	7	10	5	5	8	6	4
Manchester.....	8	6	8	7	9	8	7
Big Bob.....	7½	6	7	6	3	5	5
Cumberland Triumph.....	8	6	6	5	5	4	7
Jucunda.....	10	8	7	6	2	4	7
Sharpless.....	9	7	8	5	5	4½	8
Windsor Chief.....	8	6	6	5	5	5	5
Glendale.....	8	6	10	8	8½	8½	6½

The next paper was upon

COMPARATIVE MERITS OF NEW VARIETIES OF SMALL FRUITS.

BY G. F. ESPENLAUB, ROSEDALE, KAS.

In this paper on small fruits, I will begin with the strawberry as it is the first of the season to ripen. No wonder there are so many new varieties originated for it is the king of berries. There is scarcely a county in the United States, where this berry cannot be cultivated for family use at least, and where one variety will not succeed another will. And I may say here, that we, in the west, with our dry climate, must depend on kinds that can endure a drouth of a month or six weeks, to make them profitable.

Of the first to ripen is the Crystal City; it is of good quality, of medium size, very productive and carries well. Next comes Crescent Seedling, the most productive of all, colors up high, quality fair, a good shipper; the plants will bear more neglect than any other kind, is likely to make too many plants, should be

planted farther apart in the row than most kinds. Captain Jack stands heat and drouth remarkably well, is very productive, of good quality, ship well a short distance and makes an excellent fertilizer for the Pistilate *Crescent*. Cumberland Triumph, one of the best for flavor, runs very even in size, but lacks color and firmness for a first class market berry or for shipping; no plants will stand the drouth better.

Miner's Prolife is good in all respects, very high color and brings the highest price in market. Windsor Chief, a very fine berry, high color, ships well, is a good cropper. Sharpless, one of the largest berries, but uncertain if plants are allowed to grow thick, quality second to none. Chas. Downing is more extensively cultivated in the vicinity of Kansas City than any other kind, and I think it will take a faultless berry to supplant it to any considerable extent. We expected much of the Manchester, but fear it has not come to stay in the west, for it suffered a good deal during last summer's drouth, though it is one of the finest growers and of fine quality.

A great deal is promised us of the James Vick, a western berry originated by S. Miller of Bluffton, Mo., who is also the originator of the Capt. Jack. It has stood last summer's drouth exceptionally well, making plants during the dryest weather. For home use, Mt. Vernon, Warren and Longfellow are very fine berries. For distant shipping the Wilson is still at the head of the list, as it colors up several days before it is ripe; it is therefore still cultivated in the south more than any other berry, but it is not reliable in our western climate. With the Glendale, the strawberry season closes; this variety is also one of the best shippers for long distances, but is only of fair quality.

Sometime before the strawberry season closes come in the raspberries. This berry everybody can grow as cheaply as corn, and with as much certainty. The earliest of the reds has been until now the Highland Hardy; but now we are promised that the Hansel is several days ahead of it and more productive. The best for quality and hardiness is the Turner, but is too soft to handle. For quality and hardiness combined, I would take Cuthbert, but for profit alone I would place the Thwack ahead of the reds. Of the Blackcap, Davidsons Thornless is the earliest, but lacks hardiness to admit of extensive cultivation. Next follows Doolittle, but about the same time ripens the Hopkins; it is very hardy; of the most vigorous growth and immensely productive; the berry jet black and of first quality. The Souhegan and Tyler are of the Doolittle class;

are said to be several days earlier, but need another season's trial here. What the Hopkins is for an early berry the Gregg is for late, only the latter ripens its crop in much shorter time than the former.

Of currants, Fay's Prolific Red is a great acquisition as it is much larger and more prolific than the old sorts. Lee's Prolific Black is believed to be the largest currant in cultivation.

Of the blackberry there are a number of new varieties lately introduced. Of these the Snider will probably be more extensively cultivated north of this than any other new variety, on account of its hardiness. It is very prolific and a vigorous grower, but rather small. But where the Kittatinny is hardy enough it will be hard to find a blackberry with more good points than it. Most of the new sorts are smaller in size, or are more acid.

The latest candidate out is the Early Cluster; it is said to be immensely productive and very early, ripening in New Jersey about July 12th.

Of gooseberries, the most prolific is yet the Houghton; the Mountain Seedling is the largest native variety, a very strong grower, free from mildew, but too shy a bearer. The Smith and Downing are some of the best new sorts and worthy of trial.

G. F. ESPENLAUB.

Time being had, the Secretary, L. A. Goodman, Westport, Mo., read an essay on the

COMPARATIVE RESULTS OF SOILS ON SMALL FRUITS.

An idea of going into the geological formations of the different soils in treating this subject, I do not consider my province, for under that head it would be *Geology and its relation to fruit-growing*. It matters not to us if the bluffs were formed thousands of years before the valleys or the prairies, or if they were formed first; whether the oak lands and the light colored soils first appeared above the waters, or if the black soils were formed from the washes of the hills, or the opposite the case. These matters of course are of the greatest interest, but for practical matters we shall treat this subject so that all may understand.

Perhaps far better would it be if some one could have been selected who has had experience in many different counties and localities of the State. My own experience is based on up-land, high and dry.

1st. What is known as white oak land, poor and clay soil, or rather shale soil, such as we have back from the bluffs of Kansas City.

2d. On black walnut up-land soil, rather black, and rich enough to produce seventy-five bushels of corn per acre.

3d. On the valleys between the hills where there is an abundance of rich alluvial deposit washed from the hills, and very rich in everything that tends to produce growth of plant or tree, and every rain adding to its fertility.

4th. Besides these three localities, I know from the experience of others the results of growing fruits on the rich creek bottoms that are scattered through our country.

5th. Bluffs such as are about Kansas City.

6th. Prairie soils; these six locations will probably give us all that we may wish to know about the different kinds of soils in the growing of small fruits.

Yet your results must not be based entirely on my experience with these, for the cultivation, trimming, and the weather may some years entirely change these results.

If every year we could have the same weather, the same time of trimming, and the same time of cultivating, then the results of them would always be the same, and when we found success in one location, soil and plan, we could always have the same.

But this you know to be impossible, and hence we can give only general results of all our experience. We could satisfy ourselves easily about the varieties for success or failure, but I do not deem that an answer to the question. But rather on what soils will they do best.

THE STRAWBERRY.

Certain varieties, such as Jucunda, Triumph De Gand, etc., do best on the poor or white oak soil. The other varieties, Chas. Downing, Miner, Capt. Jack, etc., do best on the black walnut soil. None will do so well on the made land unless there is lower land below them for drawing off the cold air. On the creek bottoms they will grow wonderfully, and if favorable, will produce enormous crops.

Mr. Chase, of Independence, Missouri, on these lands produced berries at the rate of \$1,200 per acre without extra manure. Other seasons he received scarcely anything. On the second kind of soil, with subsoiling and plenty of blood for manure, with the best of care, Mr. Hopkins, of Kansas City, sold about the same amount from

one acre. The result of all I know is that, if possible, I should plant on rich creek bottoms, especially if the creeks contained water most of the year.

We can grow more berries and larger ones with less labor than any other locality.

On 5th, bluff land shale, they will succeed if we have wet seasons.

On 6th, prairie, about the same as on walnut soil.

With the raspberry my experience, and that of others, would not give them a place in the creek bottoms.

The larger growing black caps, such as Miami, Hopkins and Gregg, do best most seasons on the white oak lands where the land is not too rolling so as to let the soil all wash off.

The smaller black caps are the Doolittle and Davison Thornless, the black walnut soil suits them, also the valleys between the hills we get a stronger growth and larger berries.

The red varieties of very strong growth, such as the Cuthbert, also need rather the poorer soils, while Thwack will do better in the richer soils of the valleys.

For creek bottoms I would never plant red berries, but in favorable locations would plant the black caps.

If it were not for the late spring frosts, I should always plant them in the valleys and bottoms, but it is so often that one frost will destroy the whole of the crop that it is rather too risky to put them there, except on one condition, that you have a body of water near them. The water will then protect them from the late frosts.

Upon rich prairie up-land I find the smaller growing varieties do better than on the poor land, but the larger growing varieties no better, if as well, as on medium land.

On the bluffs we have about the opposite; large varieties best, small varieties, medium.

The blackberry, I am in doubt about, and if I was to plant I could hardly tell where. I knew more about the blackberry ten years ago than I do now. The rust has been something like the pear blight, and has beat us on every theory as well as every experience.

The high poor lands seem to suit them best, and we get our best berries there. Before the last two years we supposed that location was proof against the rust, but it has taken them on the hills as well as the valleys; on the level ground, moderately rich, and

richest of the bottoms, and in some spots the richest land is the best, and the opposite is the case. Now the last part of the summer the richer spots that were the worst affected seem to be the best, and the disease may be wearing out in some places. The result of all I have seen from others, and of my own experience, would be to plant the blackberry wherever I had a good chance, not caring much for the soil, but I would also plant on very poor soil, knowing that sometimes they do best there, and at the worst they will improve the land where they are planted, and it will continually grow better.

For the currants we want the best of soil. On the poor soil they will fail; on the black upland they will do better, and in the rich valleys they will do the best. My result of 500 bushes planted on high, poor land twelve years ago, is that not one is left. While others on rich, deep soils are in splendid condition.

Like the quince they need moisture, and if on good land and partially shaded, they will succeed admirably.

The gooseberry, above all, wants the highest, driest and poorest soils we have. On any damp, rich soil they will prove a failure many times; but our success (if it is a success to grow such poor fruit at all) is on poor land. In fact, on poor land, we had such a crop of fruit that we were glad to cut them down and plow them up.

The grape requires the best of drainage, and hence it is best to put on the side hills, but not on too poor land. On the oak land we succeed well; on the richer walnut they do well also, if the land is rolling. In the valleys they are a failure and in the bottoms they will bear well sometimes but are poorer in flavor. On the rich prairies, some years, if dry, we have splendid fruit. Other years none at all. On the bluffs we have the best quality and generally the best success.

If you expected me to give the result of the analysis of soils, you will be disappointed, because I do not believe there is much profit in the analysis of soils to the average fruit grower.

In fact, a certain professor says that it is almost impossible for the chemist to tell the difference between a soil manured heavily and one not manured. The amount of manure being such a small matter to the bulk of soil on an acre one foot deep; therefore I have made the following six varieties of soils which anyone can tell, and the results of my experience and others with whom I am in contact is given in as concise a form as possible.

L. A. GOODMAN.

RESUME OF REPORT ON SMALL FRUITS, BY L. A. GOODMAN.

Fruit.	High, White Oak.	High, Walnut.	Rich Valleys.	Rich Bottoms.	Prairie.	Bluffs.
Strawberry.....	Some good; others poor.	Those good on 1st, poor; those poor on 1st, good.	Only good if low land is near (or water.)	Some seasons extra; other seasons poor.	Slow growers do the best.	Wet seasons they do well.
Raspberry.....	Large Black Cap, good; strong Red Cap, good.	Small black, good; short red, good.	Weakest varieties do well.	If near water, good otherwise failure.	Those which do the best on the prairie, do the poorest on the bluffs and the opposite.
Blackberry*						
Currant.....	Poor.	Better.	Best.	Medium.	Failure.
Gooseberry	Best.	Poor.	Failure.
Grape	Best on the hills.	Good if not too level.	Failure.	Failure.	Good to fair.	Extra quality.

* Preference for the Kttatinny on poor land. Preference for the Snyder on good land. Plant them anywhere, they will rust anyway; then when they are gone plant again.

Next followed the discussion on small fruits on all points brought out by the essays.

W. M. HOPKINS, KANSAS CITY, MISSOURI.

Places Chas. Downing at the head of the list of strawberries.

Grows them in matted row. Rows $3\frac{1}{2}$ feet apart, plants 16 inches in the row. Cultivates well the whole summer keeping the ground well stirred, allowing no weeds to grow. Mulches when the ground is frozen in the fall.

Windsor Chief is very good, and with the Mount Vernon, we have the three best according to my experience.

I am testing Manchester, James Vick and Phelps. Do not like Capt. Jack nor the Crescent, because there are too many small berries. Crescent is too soft also.

Cumb Triumph is too soft for market, but fine for family use.

Miner's Prolific is not as good as he expected it to be from other's experience.

Kentucky, worthless. Jucunda, ditto.

Prepares the ground well, plows as deep as possible and follows with a subsoil plow, loosening the ground to a depth of fifteen to eighteen inches, but not throwing the soil on top. The ground thus prepared will hold the moisture during a protracted drouth.

Windsor Chief does not last as long in a plantation as Chas. Downing or as some other kind, but they do finely while they are in good bearing condition.

Uses as a fertilizer *Dried Blood* which he obtained from the packing houses at Kansas City. It comes in sacks and is in grains like powder. Thinks it is the best thing that can be used on the strawberry beds. Uses 500 pounds per acre; scatters it broad-cast over the whole bed. Has used it two seasons and thinks it the best of all fertilizers.

Obtained over 5,000 quarts per acre and realized twenty-four cents per quart, making the acre bring \$1,200., but has never been able to obtain anything like 10,000 to 13,000 quarts per acre, as others have done.

In answer to questions he answered: the Capt. Jack was a good shipper, carried well to adistant market, has sent them to Denver, 600 miles, in good condition.

What we want is a *good, productive and firm* berry, that any one may eat, and yet carry well.

Fears the Sharpless will be worthless, as it does not bear enough.

Wilson does not succeed well on my land and have had to give it up.

Is satisfied that one acre of the right varieties, well cared for, is worth three or four poorly tended, and one box of fine large berries is worth three of small, poor ones.

Was requested to name the four best varieties. Named them in their order; Chas Downing, Windsor Chief, Mount Vernon and Miner's Prolific.

The results of Mr. Hopkins' experience was given as he said he would at the beginning, if they would ask questions, and so they did ask questions and the results of these are given above.

We have here in a nutshell just what many would like to know before planting. It was *one* of the valuable talks that the society listened to during the meeting. It is only another instance of the benefit to be derived from the experience of others and is worth many dollars to any one who wishes to plant, either for himself or for the market.

The table given by Jacob Faith is very valuable to everyone, showing just what points we want to know in planting.

The chair noted an instance of one of his neighbors, who had a fine bed of strawberries which was matted full. He cut out pathways through the bed leaving the young plants and then cut through the rows, leaving in hills. The result was a fine crop of beautiful berries. Thinks mulching should be so heavy that weeds should not grow through it. Places Green Prolific as one of the best in fruit, plant and bearing qualities.

Sometimes the fruit fails from the want of pollen sufficient to fertilize the berry. Goodman spoke of an instance of this kind near Kansas City last spring. The rains were so heavy that they washed all the pollen from the fruit, and the consequence was that one-half of the fruit failed to perfect itself and the crop was cut short and stopped off suddenly, much to the surprise of the growers, who did not understand the matter.

One member said he had Crescent six or seven years and it is the best of all varieties on his grounds.

The Secretary says that the Crescent has paid him ten dollars to one for any other variety. When it comes to berries for money it stands at the head, way beyond all others. It only wants some variety planted near it to fertilize it in order to make it one of the very best for all farmers and fruit-growers to plant. It does not take one-half of the work to keep it clear. It does not burn out in

the summer nor kill in the winter; drouth does not affect it; wet weather does not injure it, and in fact it is as nearly proof against all ills, insects, frosts, heat, water and drouth, as one can imagine a berry to be. It is a berry for all, and will give more berries than any other, *provided* it is well fertilized. The Secretary also spoke of some two or three others who had made many times more money out of it than any other.

Mr. Ingraham, of Nevada, said that he planted in hills and kept all runners off, and took the best of care with them; planted twelve varieties; mixed them all through the bed. They yielded *two* quarts to the hill, and of the finest and largest berries he ever saw, in fact, so large were they that he would be afraid to give the size; thinks this the way to grow large specimens for display; thinks Chas. Downing and Wilson's the best of all he has tried.

Mr. Murtfeldt said that we must remember one thing in particular, and that was this: one variety may do well in one location and poor in another, and we must test these on our grounds and be governed accordingly. For instance, the Hudson River Red Antwerp was the finest berry that ever grew in New York but worthless out here. Many others are the same, and we must look well to what we know to be good.

One member said that the Crescent would carry well if picked in time and not allowed to get too ripe. Has sent them to Las Vegas, N. M., and thinks it must be good to carry that far.

The discussion took rather an informal turn, and each one spoke of the fruits which he happened to succeed with or fail with, as he thought of them on the instant. One finds the current a failure, another, a success; one, because he plants in the open field, while the other plants in the shade of trees or on the north side of a fence and has an abundance of fruit. One would never plant them because he plants on the top of a ridge and they fail, while the other plants in low moist places and finds success.

Mr. Ingraham has best success with the Miami and Gregg for black cap raspberries; has done away with the others. The red cap varieties do not succeed with him and would not plant at all. Black-berry: the Snyder succeeds best and is perfectly hardy and free from rust. Likes hill planting best.

Dr. A. Goslin, of Oregon, Holt Co., has planted many varieties in Northwest Missouri, and has had some failures and some success with the strawberry. Now has a number of varieties that succeed admirably. Crescent brings the most money. Chas. Downing is best for family use. Sharpless bears well and very large.

Would now tell a berry story and a true one. Has grown the Sharpless so large that on the 11th. of last June, at an exhibition by their society he had a quart box of them, and there were only *thirteen* and the box was full. The largest one measured $8\frac{1}{2}$ inches in circumference; as large as a good-sized peach. These facts are vouched for.

Of the newer varieties he likes the Bidwell very much; it is a very productive and hardy vine. On one hill has counted 230 berries, and not very small either. Consider it second in size, Sharpless being first. The third in size is the Cumberland Triumph, being regular in size and very fine. Sold them for thirty cents per quart. Grows all varieties in hills. Re-sets every three years and plows up the old beds. Puts the rows three feet apart and plants one foot apart in the row.

Of the raspberry, counts the Souhegan and Gregg the best of the black varieties and the Cuthbert the best of the red varieties.

For the blackberry, likes the Snyder because it is hardy and does not rust. But it must be planted on the richest ground or it will be small.

The result of all the discussion was of benefit to every one present, and any one wishing to plant could profit by the discussion and be ready to plant intelligently.

The report of a majority of those present would justify the following as a list for a person to plant, in the order named:

STRAWBERRIES.—Chas. Downing, Crescent Seedling, Miner's Prolific, Mt. Vernon, Cumberland Triumph, Bidwell.

RASPBERRIES, BLACK CAP.—Hopkins, Souhegan, Miami, Gregg.

RED CAP.—Cuthbert, Thwack, Shaffer's Colossal.

BLACKBERRIES.—Snyder. Kittatinny.

The Chairman appointed the committee on fruit on the table: Messrs. Haseltine, Hall, Espenlaub.

Mr. A. W. St. John said he wished to announce that arrangements were made to entertain every one present, and wished no one to go away unless provided for.

Moved and carried that we adjourn until 9 o'clock A. M. tomorrow.

WEDNESDAY FORENOON.

Called to order by the Chairman, C. W. Murtfeldt.

Prayer was offered by Rev. Mr. Stewart.

The programme was taken up in regular order as follows:

1. Grapes—H. Jaeger, Neosho, Mo.
2. Newer varieties—Jacob Rommel, Morrison, Mo.
3. Crop of 1883—G. F. Espenlaub, Rosedale, Kas.
4. Insects—Canker worm—H. Sheply, Nevada, Mo.
5. Window Gardening—R. S. Brown, Kansas City, Mo.

An essay by H. Jaeger, Neosho, Mo., was first read, as follows:

GRAPES IN SOUTHWEST MISSOURI.

The first plantations of grapevines in Southwest Missouri were made principally with Concords, Catawbas and other varieties of our American Foxgrape, (*Vitis Labrusca*.)

They all proved failures in the long run, from a financial point of view. Only two varieties of this species are yet being planted to some extent by those growing grapes for profit, viz: Ives' and Perkins. The latter especially is the healthiest of all Foxgrapes here, and may remain a profitable market variety, as long as good looks are more important than fine quality.

The old Taylor grape, an accidental hybrid of *Vitis Riparia* with *Vitis Labrusca*, is the parent of a new race of grapes of great promise. Those tried here long enough to mention are:

Elvira—Seven crops; great bearer; rots less than any *Labrusca*, except Perkins; fine quality and valuable for wine and home use.

Uhland—Six crops; quality best; but rots too much to be recommended.

Noah—Five crops; a very prolific, large and good market variety; said to make fine wine; some rot; promising.

Grein's Golden—Four crops; good bearer; fine large fruit; rots but little; promising.

Missouri Riesling—Four crops; no rot so far; very good quality; medium size; late; valuable.

Elvira Seedling—No. 100; five crops; little rot; bunch and berry Concord size; Catawba flavor; very early; sweet; dark amber.

Black Pearl—Four crops; some larger, better and healthier than Clinton, but not equal to preceeding varieties in quality.

Wilding, Beauty, Amber, Etta and other descendants of Taylor, grown by Mr. Jacob Rommel, of Morrison, Mo., are not tried long enough to give an opinion about them.

To the species *Vitis Aestivalis* belong the Norton (Virginia Seedling) and Cynthiana. They have been tried here since 1866 and are now being generally planted by those making a business out of grape and wine growing. They are almost exempt from rot. Late frosts alone, have ever prevented them from yielding a fair crop. Appreciated in our southwestern towns for market and wine. Without exaggerating, it may be said, that but for these two varieties, grape-growing here would to-day be followed only by a few experimenters and amateurs.

Hermann—A seedling of Norton, rots in unfavorable seasons, and White Hermann, a highly refined seedling of Hermann, rots too much to be of value here.

Langendoerfer's White Norton is a seedling some smaller than its parent, a few days earlier, of golden yellow color, fine and very sweet. It produces an American "Sherry." Grows slow and bears moderately, but is very hardy and has brought seven crops without losing a berry by rot.

Balsiger's White Norton, another Norton seedling, shows some *Labrusca* blood. This strong and hardy vine brought eight crops here. Fruit similar to Elvira and better in quality when full ripe. Rots but little and ripens later than any other grape. Here and further south, where it will mature, it is a good wine, and the best very late market grape.

Neosho—A wild *Aestivalis* from Newton county, Mo., is very healthy and prolific here, but can be recommended for wine only. Many other selected wild *Aestivalis* and improved seedlings of them are being tried here, and the best will be named, when tested sufficiently.

Some attention has also been paid of late to *Vitis Rupestris*, a native species much esteemed in France as a phylloxera-proof grafting stock, and now beginning to be appreciated as a direct producer.

Some *Rupestris* wine made here of selected varieties was pronounced by good judges at Bordeaux and Lyons to be equal to a good old "Burgundy" and decidedly the best American claret yet tested in France.

Vitis Rupestris, here and in Europe, bids fair to attain greater importance than its modest appearance would indicate. As a parent

of future hybrids, French botanists prefer it to all our other species and here also we expect good results from the introduction of such a fine, healthy and hardy strain of blood.

HERMANN JAEGER.

NEOSHO, Mo., Dec. 5th, 1883.

Next followed a report by Jacob Rommel of Morrison, Mo.:

MORRISON, GASCONADE Co., Mo., Nov. 13, 1883.

L. A. GOODMAN, *Secretary of Missouri State Horticultural Society, Westport, Mo.:*

In reply to your request for report on treating grapes, varieties, as cultivated mostly here, and which have done best here in successive years, I would reply, as follows: Norton's, Concord, Ives' Seedling, and Monette for red wines. Elvira, Missouri Riesling, Catawba, Martha, Goethe, Pearl, Beauty, and Transparent, for white wines. These are at present our leading and most reliable grapes cultivated. Cultivating most grapes for wine.

Locations: best high up-lands, sloping south and east, well drained, soils underlaid with lime-rock. Thorough cultivation, keep free from weeds, with close summer pruning forepart of the season. Give good ventilation to prevent mildew, and soil should not be too rich. Poor soils generally produce the best qualities of grapes, if not in quantity. Pruning is a main point. Vines are generally overpruned, causing fruit to become irregular and inferior. Grape growers should know the strength of their vines and prune to their strength. Every grape grower should give trial to more kinds, and such as may prove well with him are such as he should plant. We have at present too many kinds of grapes that will only do well in few localities. For southern localities other kinds, such as Herbermont, Cunningham, Rulander and Triumph, will do well, as well as Etta, White, and Black Hermann. Those grapes are of excellent quality for southern sections and do well there.

This is about all I know to report of the cultivation of grapes, of such as have thus far been cultivated about here with the most success. However many other new kinds remain to be tested, that may prove to be valuable additions. Hoping you may excuse this short report, I remain, yours truly,

JACOB ROMMEL.

P. S.—I am sorry the grapes sent to the exposition were received on the last day and badly bruised.

J. R.

Then follows a report on

NEW VARIETIES.

FRIEND TRACY:

We are sorry that we cannot be with you all at Carthage. At your request we send you some samples of wine of last year's vintage, however, such are, as yet, too new to give them full justice.

As to my seedling grape vines, I cannot give you a history or description of them all, and will therefore name a few that have been fully tested and are worthy of cultivation and dissemination.

Amber—A sister of Elvira and a cross between Riparia and Labrusca, having some characteristics of both species. Vine, hardy, vigorous and moderately productive; bunches, long shouldered, compact; berry, medium, oblong, pale amber when ripe; skin, thin; pulp, tender, sweet, juicy and of fine flavor; ripens later than Concord and some earlier than Catwaba; a table grape combining good qualities with attractive appearance, but too tender for shipping to distant markets; makes also a very good white wine.

Beauty—A cross between Delaware and Maxatawney; vine, a vigorous grower and healthy, resembling Catawba; bunch, small to medium, compact; berry, in size and color, between Catawba and Delaware, oblong, covered with lilac bloom, thick skin, and will carry well; ripens between Delaware and Catawba, and is of very fine quality, having tender pulp, sweet with delicate flavor; a promising market and table grape, making also an excellent wine grape.

Black Delaware—A seedling of Delaware, very early, of fine quality; very productive, hardy and healthy; bunches, above medium; berry—compact, firm; valuable market grape.

Elvira—This is a seedling of Taylor. On account of its enormous productiveness, hardiness and never failing to produce a heavy crop, and produces a very fair white wine, it has now become our leading grape for production of white wine.

Etta—A seedling of Elvira, resembling Elvira, but has larger berries with firmer skin; superior in quality; ripens later. The vine is of very vigorous growth, with strong healthy foliage; hardy and productive. This grape was awarded the premium for the best bearing cane of new seedling, wine quality and productiveness to rule, at the Mississippi Valley Horticultural Society meeting in St. Louis, September, 1880.

Faith—A seedling of Elvira; vine, vigorous healthy grower, sufficiently productive; long shouldered medium size bunches; berry, small to medium, white or pale amber color, juicy, sweet and

purely flavored; ripens very early, before Hartford; excellent in quality.

Montefiore—A seedling of Taylor; the most promising red wine grape of its class. Vine, moderately vigorous in growth, but very healthy and hardy; very productive; bunches, medium size; berry, medium size, round; skin, thin but firm, black with a delicate blue bloom and rich in coloring matter; flesh, melting, vinous, sweet with a delicate aroma and delicious flavor; ripens with Concord. At the Hermann fair, 1882, this grape was awarded an extra premium as the best new seedling for red wine.

Pearl—Taylor seedling, a promising new variety, both as a table and wine grape; bunch, larger than Elvira, shouldered compact; berry, medium, round, pale yellow, covered with a delicate bloom; skin, thin and transparent; pulp, soft and melting, juicy, sweet and high flavored; vine, a very strong grower, short jointed, grayish wood with bright green leaves; very productive, healthy and hardy; ripens with Concord.

Transparent—A seedling of Taylor; bunch, small, compact and shouldered; berry, same size as Taylor, round, pale greenish yellow, transparent; gray, spotted skin; thin, no pulp, very juicy, sweet and of fine flavor; vine, very strong grower, rather long jointed grower, resembling its parent in leaf and growth; sets its fruit well; free from mildew or rot; a wine grape of high character.

Wilding—A seedling quite different from all other grapes; vine, of a very vigorous growth, hardy and healthy; bunch, medium, loose shouldered; berry, pale green almost white, transparent, round, of full medium size, juicy, no pulp; skin, very thin and tender; ripens with Concord. It is an excellent grape for family use, yet unfit for marketing, being too tender; it makes a very fine white wine.

I have a number of most promising seedlings growing that promise to be valuable additions, of which I wish to say nothing at present, as I wish to give them another year's trial, and will then give further descriptions.

Friend Tracy; should you deem my foregoing descriptions of my seedlings to be of any interest to the society, it would please me very much, as I can not be with you all. With much regret I remain,

Yours truly,

JACOB ROMMEL,

It would please us very much to hear from your proceedings at Carthage. With respects to all the members, we remain,

Yours truly,

ROMMEL & SOBBE.

Report by G. F. Espenlaub, Rosedale Kansas, on

THE GRAPE CROP OF 1883.

The grape crop of the past season has been a variable one; some vineyards carried a very heavy crop, while others close by had scarcely half a crop, owing entirely to locations. The cold wave struck some vineyards, while in bloom and missed others. High locations suffered worst, and early varieties suffered worse than late ones. Excessive wet weather caused a great deal of mildew and varieties with thin foliage like Delaware, Catawba, Iowa and Goethe suffered most from this trouble. The best remedy for mildew is to cultivate thoroughly after the rainy season is over and before the ground gets too dry; this will cause a new growth of foliage to cover the fruit, and a healthy flow of sap as the mildewed foliage is likely to drop and leave the grapes to hang exposed to the sun. Grapes must have foliage. They cannot ripen without it.

Of new varieties that fruited the past season, the Early Victor stands well up at the head of the list. It is one of the earliest to ripen; a prolific bearer, being a seedling of the Concord. It is hardy and vigorous, and of very fair quality. Another very good early sort is the Christine or Telegraph; very vigorous and healthy, very productive and very little inclined to rot. It is gaining ground every year. Elvira fairly outdid itself in fruitfulness, it ripened its prodigious crop most splendidly, and was admired by all who saw it. Missouri Riesling has done splendid. It is some later than its relative, the Elvira, but it is much better than it. Quite a number of Taylor seedlings are very promising; such as Amber, Noah, Pearl, Uhland and Black Pearl.

We may hope for and expect better results from the Taylor seedlings that have originated in the West, than the *Labrusca* seedlings, which are sent to us from the East. Duchess, Princess and Jefferson are very poor growers and very subject to mildew.

Goethe is still an old standby, and I think it will be some time before we find something to take its place for a late grape.

If properly protected few grapes will bear better crops than the Herbemont. It is always exempt from rot or mildew, holding its foliage green to the last.

Grape growing is yet in its infancy in this country. Great progress has already been made in the quality of new seedlings. It is not for us to see it reach perfection, but the day is not far distant when American grapes will be produced, equal in quality for table

or wine, to the best European varieties, and much hardier than the best sorts in that country, and hence surer crops.

G. F. ESPENLAUB.

The discussion following these papers was sharp and interesting and took grounds really outside of the usual course.

Mr. I. S. Haseltine first differed very materially from the essayists. His experience teaches him that cultivation causes the rot, and he has learned this also from the experience of others in his county, (Green).

Passing by a vineyard treated in the usual way, he found the owner digging them up and throwing the vines over the fence, because they rotted so badly that they did not pay him. Took these old vines and planted them near some apple trees and let them run over the tops of them. They have been there for the last seven years and have been a grand success and loaded down with grapes, and have never been pruned at all, and he objects to pruning in the least. Thinks pruning is like the old plan of doctoring by blistering, and bleeding, and objects to the one as much as the other. The old times have passed and the doctors never do it more; and so he would use common sense and not prune or bleed at all. *Never cultivates, but mulches heavily.*

Hopkins asked him how he would treat them for market. He certainly could do nothing with them in that condition, and for his part does not believe that he could have any perfect bunches. I should like to see him gather 300 or 500 lbs. to take to market every morning.

Ingraham has been there and seen them, and thinks it the plan to have grapes in this South country.

Ambrose thinks that for fun it may be so, but for money it would never do.

Espenlaub thinks that the plan of mulching is all right, and they will succeed well with it; but we do not need trees for them to run upon as they then get out of the way too far, but would advise high post and wire so that the air can circulate well under them.

Amsden, of Carthage, says that he has them growing in trees, but they still do rot to some extent and does not think it a sure preventative.

Secretary Goodman spoke of the teaching of Thomas Mehan in the Gardeners' Monthly, that for a number of years he had been teaching the plan of growing trees and then growing vines on them;

but trims both the vines and trees, so as to get the best results. He advocates this as the best and probably only correct plan to pursue. Mehan is one of the closest observers in the country and although his teachings do not correspond with my experience, yet we must treat such facts as these, when they come under our notice, with due consideration and perhaps some day we may find some good result from some of these facts.

He gave a few items of his own experience:

A plantation of 600 vines rotted so badly that they scarcely paid for the cultivation. They were on post and wire trellis six feet high. The ground was sown to clover, thinking it would help them. The clover was never cut, but allowed to rot on the ground. Yet in spite of this they rotted so badly that he was obliged to give up the plantation. A few of these vines caught hold of some apple trees and nearly covered tops of them, but they were no more exempt from the rot than the others, and finally were cut down. Now this was not done in haste, or in one or two years, but was about six years from the beginning of the experiment to the end. As a reason for Mr. Haseltine's success, I would say it is the same as the success of the wild vines of the woods. They will bear well one year and miss two years. Or they may succeed every year on his location; the ground may have a good deal to do with the success of Mr. Haseltine. If the vines are well mulched, the grapes will be perfect in bunch and size, and cannot be beaten by any one.

Mr. Durkes, of Platte county, still thinks that he will stick to the old trellis and wire for success. But added that if he did not trim, he would still use post and trellis and as they grew would build on more trellis, as they do in California, with their enormous growth of vine and fruit.

Question was asked Mr. Haseltine: How, when and how much do you mulch? Answered that he does it whenever he has an opportunity, and does not care how much is put on the ground. Have it well covered.

Question by Mr. Amsden: Have seen the statement made that Prof. C. V. Riley claims that the grape should have wet feet a part of the year, in order to kill the root louse. Would like to know if it is so?

No one seemed willing or able to answer.

Mr. Pretzinger, of Clinton, followed in the same strain. Has mulched and planted the Concord vines near trees and they have never rotted.

Mr. Ingraham has visited twenty-five counties the last summer and he is perfectly satisfied that there is vastly too much pruning, not only of the grape, but also of the apple. For himself, he would not prune at all.

It seemed to be the general belief of those present from Southwest Missouri that the grape was not a success in their country, and that there was no use to plant them. It seems strange to me that such should be the case, for we find plenty of the finest kinds of wild grapes all along the rivers and I am loth to give this up as a fact, but think that with other varieties there would be the best of success. Goethe, for instance, seems to be a variety that would do well there. Those old red, rocky hills seem to be just the home of the grape, and what is wanted is persistent effort in that direction. If as much endeavor was used in the direction of grape culture as is used in the peach culture, I imagine there would come up to us a different story. And yet you find that some varieties of the peach rot very badly; but you would not give up growing peaches. Of course you then plant varieties that will not ripen when the rainy times come. Do the same with the grape.

Southwest Missouri is to be one of the best fruit producing regions of the West and it is well for us to look to it that we do our duty. The climate and soil seem to be just suited to the growth of all kinds of fruit and it is fast becoming a leader in this matter.

The next subject to come up was The Insect Enemies, and a paper was read on

THE CANKER WORM.

BY H. SHEPLEY, NEVADA, MO.

As the Canker worm has made its appearance in Southwest Missouri in many localities, and proved very destructive to fruit interests, and as I have been successful in exterminating them in my own orchard, I will, by request, give my experience and observation of this insect to the society. In the Spring of 1881, I first noticed them in my orchard. I paid no attention to them, not knowing the nature of the insect and the fearful damage they could do, thinking they would disappear. That year they stripped the foliage and blossoms from 1,000 trees. My orchard in May, presented the appear-

ance of having been scorched by fire. I not only lost that crop of fruit, but the trees did not recover from the ravage of the worms so as to form fruit buds for the following year. So I lost two crops. Last Spring they were spread all over the orchard, and would eventually, I believe, have destroyed my orchard, but I was ready for them with a remedy that has proved a splendid success. But before I proceed to give it, it will perhaps be in place to give a brief description of the Canker worm. The Canker worm, without giving the scientific name, is a caterpillar. The female moth, from which these Canker worms are produced, is wingless, about three-fourths of an inch long and dark ash grey. The males have wings, are about one inch long, and are of light ash color. These moths come out of the ground in March, or as soon as the frost leaves the ground in the spring. The wingless females creep up the trunks of the trees and are followed in a few days by the males, when pairing takes place. The eggs are placed on the branches and bodies of the trees, under the loose bark, in leaf rollers' nests, or any place that the eggs can be hid, in clusters of from fifty to a hundred. Soon after this the moth dies. The eggs are hatched about the time the leaves start. The young worms gather upon the tender leaves, and creep into the buds and flowers. At first they make but small holes, but as they grow they at last devour all the leaves and flowers. The worms vary in color. When very young they are of a blackish brown color, but when fully grown, they become ash colored on the back and black on the sides. When full grown they are about one inch in length. After eating from three to four weeks, they begin to quit the trees on which they have fed. Some creep down, but most let themselves down by a web or thread. They burrow in the soil beneath the tree, and are very soon changed into chrysalids. The chrysalis state continues till next spring. The canker worm has ten legs, six in front and four behind. They are sometimes called span worms or loopers from their singular mode of progression. When creeping they arch up the back and bring forward the hind part of the body, and then resting on the hind legs, they stretch out to their full length in a straight line, and so repeat the process. Their principal way of spreading in an orchard is by hanging to their threads, and being blown by the wind from tree to tree.

There are various remedies recommended for the extermination of the Canker worm, but I will only give my own, as I believe it to be the cheapest, and within the reach of all, and a sure exterminator, not only of the Canker worm, but of all insects that eat the fo-

liage of the tree, such as leaf rollers, etc. I will give the remedy as I used it. I procured three coal oil barrels for one wagon, filled them with water; then I took one and one-fourth pounds of London Purple for each barrel of water, mixed it separately in a bucket (as it is hard to mix with water, being somewhat the nature of flour), then stirred well in the water, repeating the stirring process often while using. I drove between the rows of trees, spraying on each side with a fountain pump. If the wind was unfavorable, I only sprayed one row at a time, driving on each side of the row. Care should be taken that the team or person using the mixture does not inhale it, as London Purple is very poison. I found it was not best to make the mixture very strong, nor to deluge the tree, and that a pump throwing a fine spray, and carefully wetting each leaf and limb, was best. With two teams and four men, I could spray from three to four hundred trees per day. As the worms do not all hatch at the same time and rain removes the poison, I went over my orchard the second time in about ten days, and I believe I killed every worm. It cost me, including pumps, barrels, poison and labor, about three cents per tree for twice spraying. Of course with a small orchard, the expense would be slightly larger. Several orchardists in my vicinity have used this remedy with perfect success, and I have no hesitation in recommending it to be a certain and cheap remedy for the pest that is fast spreading in this part of the state.

Question. What kind of a pump.

Ans. The fountain pump, a fine spray.

J. C. Evans spoke of this paper as being of great value to the society and to any one who is troubled with the insect enemies. To know just what to do and when to do it, is sometimes worth a great deal to us, when the time comes, and to his mind this is just what the paper gives.

Question was asked if there are two varieties; one that works on the walnut and the other on the apple.

The answer given by a number was that there are.

Mr. J. K. Glassford, of Carthage, gave his experience with them. Thinks they are carried by the wind long distances, and fears them very much. Killed them once on his trees, but thinks they were resurrected next spring. In fact he finds more the next spring than before he killed any. Was very glad to hear of this remedy and fears he shall have to use it next spring, for he says that there is scarcely an orchard in Southwest Missouri that is free from them.

Mr. Shepley said he did not begin killing them soon enough and

many had gone into the ground, and those were the ones resurrected, but he can assure that none that were once killed ever came to life again.

He gave other instances where it had been a complete success after two applications. Thinks if he had known before they came what he does now, he could have saved hundreds of dollars.

The chairman called J. C. Evans to occupy the chair while he gave some hints on the works of state entomologists and the need of one in our state. He then spoke of the work of Prof. C. V. Riley, and condemned the state for not keeping such a man at work at his post. The need of such a man is seen more and more every year, as insects grow more plenty. One thing we are sure of, that it matters not who may ask of him any information, they are sure of a polite answer. As to the defoliation of the trees we know from experiments that if a plant is defoliated three times it will kill the plant. Also, if a plant is kept defoliated for any length of time, it is sure death to the plant. We know that many insects are our friends; and it is important that we know them so that we may preserve them. The *preying mantis* is one of the best of our friends, and yet how many destroy them wherever they see them. Others are very destructive of our fruits, flowers, plants and trees, and we should know them also, and the means of fighting them. Very many have never seen the perfect insect of the codling moth or of the curculio, and yet how important it is to know them. A state entomologist should keep these matters before the public so that every one might know them at sight.

Mr. Glassford said this *canker worm* is all over the state, and it is very important that we should know how to kill it.

Mr. Goslin said that the *codling moth* is doing great damage and fears it much more than the canker worm. It is getting so that you can scarcely find a perfect fruit in many orchards. It would be worth thousands of dollars to the state to know just how to fight it. One plan is to bind around the tree a double fold of paper and tack it with a single tack, leaving the open or V shape next to the ground, so that the insect in climbing up will secrete itself in the fold. Then passing with a wheel-barrow on which is attached a clothes-wringer, he takes the tack out and runs the bands through the wringer, thus destroying them all. This can be quickly done and costs but little. Then put the bands back on the trees, and in ten days do the same again. Tar bands and printer's ink was also recommended.

Mr. Liston wanted to know about the *wooly aphs*. Finds it doing much damage to the apple trees and thinks one-half of the trees through this section are affected. Could anything be done to kill it?

Mr. Ingraham thought that manure is a good preventative. Would recommend hen manure as one of the best.

Mr. Amsden was making a number of experiments. One by mulching, one by cultivation and one by blue grass sod. Last year found those trees not affected, were in the blue grass sod; the others were badly affected; will continue the experiments.

Mr. Ambrose found that thorough cultivation was not a preventative as almost every nurseryman will testify. Especially is this true of the nursery.

J. B. Wild, of Sarcoxie Nurseries, found that where there was leaf trash of anykind there it was the worst; but when the ground was clean and clear there was scarcely any to be found.

Promise by C. W. Murtfeldt to give the secretary a paper on this subject in time to go into the report before publication.

Mr. Liston said he would not think of letting his trees go without the best of cultivation; keeps his orchard well cultivated and clean; finds his trees are more healthy and make a better growth, and yet he finds the *aphs* there.

Mr. Wild thought this a very important matter and that it could be prevented to a very great extent by nurserymen, by care in the selection of stocks that are clean and sound, and scions from perfectly healthy trees.

Hon. I. S. Haseltine spoke of the benefit of manure on trees even in our richest ground. He kept 1,000 sheep on a piece of ground nearly six months and it was nearly covered with manure, feeding the sheep there the entire winter. He then planted it to orchard and the growth has been remarkable, and those trees are the best and healthiest of about ninety acres of orchard. The apples are also much finer than any others; likes mulching for trees.

The next in order was an essay on

MARKETING FRUIT.

BY MAJ. Z. S. RAGAN, INDEPENDENCE, MO.

This subject is of far greater importance to fruit growers and the country at large, than in a general estimate it has heretofore been

considered. The many growing cities, manufactories and mines that have their thousands of laborers to consume, must have fruit in its various ways to sustain life and health and must doubtless demand all the surplus fruit produced throughout the length and breadth of our country.

It has been a question with many persons, whether or not fruit raising would not be overdone, from the many large plantations of commercial orchards, together with a general spirit of planting fruits for market.

So far as we are capable of judging, the demand seems to be greater than the supply. So long as good wholesome fruits, either green, evaporated or preserved, can be placed upon our markets at reasonable prices, customers will not be wanting to buy and consume. It has not been a quarter of a century since those persons, mostly in the west, who had, for that day, largest orchards, suffered a large portion of their summer, fall and even keeping fruits to go to waste, for want of a market or system of economy in utilizing it. The old fashion of hog and hominy, may be set down as among things of the past, and while the people of this age can get a good supply of fruits and vegetables, they will likely not return to the flesh pots of old.

There is a false pride among too many of our people, both in town and country, who have an over supply for family use, to suffer it to go to waste rather than be seen taking it to the market. The time has passed when this false modesty should be indulged. All our fruits are needed by those who cannot grow them, and it is just as honorable, for persons who have a surplus, to take to the nearest market a few crates of strawberries, cherries, raspberries, early apples, pears, grapes, etc., as for the farmer who hauls his grain, or drives his stock to market.

It is said that man is never so happy as when he is improving. Indeed, there is something fascinating in the planting and cultivating of trees, especially fruit trees. We look forward to a time when we shall enjoy their lucious fruits and golden harvest. Yet, is it not strange, that after years of toil and waiting, and our trees come into full bearing, that the crops are not cared for, or handled or husbanded as they should be?

'Tis here I fail in language to impress the importance of a radical change in the custom of handling and marketing all our surplus fruits. Judgment must be exercised in gathering at the proper time. If gathered too soon, we loose its best flavor; if suffered to get too ripe it is damaged or becomes stale or decayed before it

reaches the consumer. Even often when it is of very superior quality and gathered at the proper time it is often poorly packed or roughly handled, so that it has to be sold at a sacrifice instead of profit. Hence, many persons complain that fruit growing does not pay, while the fault is in themselves. To succeed requires timely preparation. If we wait until our fruit is ripe to send for material of which to make packages, we may lose all the profits by a little delay.

To succeed we must have packages and hands in time to gather the very earliest ripening, observing strict care in handling, sorting, packing and shipping, observing to brand according to grade. By the exercise of good judgment in the above suggestions one may soon acquire a reputation that will insure him the best price paid on the market for that brand.

All over-ripe fruits should be retained at home, and with our modern improved evaporators can be dried and packed away to await sale till the shipping time is over with the perishable fruits.

I have shipped cherries to various points in six different states and received satisfactory returns. That too, at a very warm, damp time of the year, and they, with improper care will spoil in one night's time. The apple, or staple, or leading fruit, from its long continuance affording fruit throughout the year, the hardiness of the tree and great productiveness, and the many ways in which it is used, all combine to render it invaluable. Indeed it would be hard to estimate its value. It is estimated upon good authority, that the apple crop for this and last year in this county (Jackson), has brought as much money or more than the wheat crop.

We commence using and shipping for dumplings and pies our June apples and keep it up throughout every month in the year, with the various times of ripening and keeping.

The time is at hand when our fruit-growers—to keep pace with other industries—will have to handle so as to utilize their entire crop in some way or other, by desiccating, evaporating, canning, etc. Apples not suitable for shipment should be evaporated and the cores and peelings made into jelly or made into cider or vinegar or fed to the hogs, so as to utilize the entire crop. There are many ways of putting up and keeping apples over winter, but at present my time will not permit of treating of the better way. The most common way of shipping apples is in barrels, but sometimes our coopers have piled on the price from 35 to 65 cents per barrel, so we have shipped of late mostly in bulk, in cars, with very satisfactory results. We have shipped in bulk to Denver, central Indiana and Ohio, and those shipped to the latter place were barreled there and

sent to Philadelphia. We have also shipped in bulk to Boston, where they were assorted and exported to England. It requires good sound apples without worms or defects, gathered just at maturity and carefully gathered and handled to bear long transportation to pay well. Yet the time may not be far distant when large shipments of our largest, best and high colored apples will be wrapped in tissue paper and sent across the continent and exported to foreign lands. We have much to learn from practical experience and system and observation, to place our fruits on the best markets at tip-top prices. Yet it will be done in the next five years if the same ratio of improvement continues that has been during the past five years.

Meeting adjourned to 2 o'clock, p. m.

WEDNESDAY AFTERNOON.

Meeting called to order by Pres. Murtfeldt and the order of business for the afternoon was read, as follows:

Welcome address, by T. T. Lenscomb, Mayor of Carthage.

Response, by Pres. C. W. Murtfeldt.

Report of Secretary L. A. Goodman.

Report of Treasurer J. C. Evans.

Window Gardening, by R. S. Brown.

New Fruits, by J. Stayman.

Pears, by J. A. Durkes.

Discussions.

WELCOME ADDRESS BY THE MAYOR OF CARTHAGE, T. T. LENSComb.

In a few appropriate words the Mayor gave the members of the State Horticultural Society a warm and hearty welcome to the Queen City of Southwest Missouri. He spoke of the importance and magnitude of this subject with which we have to deal, and thought that this county promised as many advantages to the horticulturists, as did any part of the south or west. It was a matter of importance to the state, to our county and to ourselves, and it behooves us well to attend to it.

MR. PRESIDENT, LADIES AND GENTLEMEN:—It gives me great pleasure to meet with you here to-day, and to extend to you, on behalf of the citizens of Carthage, a most cordial welcome to our city. I hope that your meeting may be pleasant, and profitable in promot-

ing a greater development of the important interests you have met here to discuss. No doubt many of you have come from a long distance, attended by a considerable expense, for which I hope the good results of this convention will be an ample reward. Gentlemen, your subject is well worthy of your presence. The horticultural interests of the state is a matter we are deeply interested in, and all efforts tending to develop a greater perfection in the fruit of the orchard and garden, will result in a substantial benefit to the patient husbandman, and an increased source of wealth to the state. Ladies and gentlemen I thank you for your attention, and conclude with the hope, that your associations with our people may be so agreeable, that you will long remember with feelings of pleasure your visit to Carthage, the Queen City of the Southwest.

President C. W. Murtfeldt responded in a few well chosen and appropriate remarks. He was here fourteen years ago, and delivered an address to the people. Horticulture is a great work, and not all ease either; we must work, watch and fight for fruit.

The address was as follows:

MR. MAYOR—On behalf of the State Horticultural Society of Missouri, as well as of myself, I tender you, sir, our grateful acknowledgements for the words of kindly welcome, which you have just spoken. All of us have heard of the often taxed, but never found wanting, hospitality of Carthage, and often have we read of educational, editorial and every other kind of conventions being held here, and of the hearty welcome and the generous hospitality extended to each and all. We have also heard of the enterprise, push and business tact of your citizens, and we are happy to behold so beautiful a city as the one whose chief executive you are. Again we thank you for the words of welcome you have spoken, and we have no doubt our stay here will be pleasant to us, and we can but hope, that it may be profitable to your citizens, and result in good to our great State.

Then turning to the members, Mr. Murtfeldt said:

And now, fellow-members, let us improve the time and go on with our labors. The field which we cultivate is beset with many vexations and disappointments. We need line upon line, and precept upon precept. We need zeal, perseverance and the right knowledge to success. And here allow me to remark, that is one of the most serious drawbacks to success are our insect enemies. How few of us have ever seen a codling moth on the wing to know it; and so of the curculio and the various borers and other depredators.

How few among us know the value of our insect friends, such as the praying mantis or the lady bug? Generally a farmer, if he hunts insects at all, destroys his friends with his foes, for he makes an indiscriminate slaughter of all.

But I am reminded that I am only President *pro tem*. The address of your regularly elected President would have given better and more full counsel and advice, and I am sorry we are deprived of this treat. And now let us improve the time and go to work.

Then followed the report of the Secretary, L. A. Goodman, Westport, Mo.:

SECRETARY'S REPORT.

MR. PRESIDENT AND MEMBERS:—In making this report, I shall mostly confine myself to the work done in trying to organize our state, in trying to find who are the fruit-growers of the state, and in trying to get them to answer my circulars; and, secondly, in giving some reports of what we have done in other places, and in presenting to you some matters that need attention at once, if we would do the best kind of work.

It seems that we must have more men at the wheel, and need many new men in the work, and I am glad to see some of them here. We need many more, and from every part of the state, to help us make a report for the different parts of the state.

I took my position on the first of last March, according to our constitution. In doing so, I found no list of Horticulturists of the state, and was informed that there was none. I had a list of members of the last meeting at Kansas City, and no other. This list comprised about twenty or more members, nearly all living near Kansas City. Are there any life members of our society? I know not. Are there any in the state who will become members? Are there any who will answer questions? Are there any who will give reports? I know not.

With these matters in view, and with the idea of getting a list of names from every county, I prepared and sent out two circulars, as follows:

CIRCULAR NO. 1.

SECRETARY'S OFFICE,
MISSOURI STATE HORTICULTURAL SOCIETY,
Westport, Mo., 188.. }

DEAR SIR:—Will you please give, on the enclosed blank, the names of the most prominent horticulturists in your county.

We wish to make a complete report from this state, and as every county should be represented, we earnestly desire your co-operation. We are behind in organization, and hope you will assist us in this way.

Respectfully yours,

L. A. GOODMAN, Secretary.

CIRCULAR NO. 2.

LIST OF PROMINENT HORTICULTURISTS,

Of County, Mo.

NAMES.	RESIDENCE.
.....
.....
.....
.....

Names furnished by

....., 188..

These were first sent to every county clerk in the state, and in answer, I received in all, returns from about twenty counties, probably two hundred names. I received many favorable replies; some offering to help in any way possible; some prophesying good as the result; others saying that the state was too slow to be able to do anything, and was too far behind the times. Some returned a list of names, and mentioned some as the best ones to answer or to help in the matter. Others returned the list saying, with long words, that they would never answer a word, or do a thing. Some giving the list with the best of good feeling, others with their worst of wishes. Some saying we have plenty of good men, such as I send you, others saying there are none, not only in the county, but also none in the state. But with all this I was glad to get the names.

I next sent the same requests to one or two papers in every county, with the same result. I received a number of very favorable returns, and offering to help in any and every way. I obtained through this means quite a number of names, and from a good number of counties not before heard from. My idea being to get some good man in every county, I next sent another letter to each county clerk, and this time obtained some more names from some more counties. Next I sent notices to the rural papers, asking any one who was interested in horticulture to send me their name and address, as we were trying to get our state organized and the state society want-

ed some one to report from each county. This brought me a few names, but not many. Next I sent to some pastors of churches, and from them received some names. Every county not heard from was again addressed through its county clerk, and a number more names obtained. The last was a letter again addressed to the papers published at the county seats, and more names obtained. So that now, as a result, I have a list of nearly nine hundred names, and expect it to reach one thousand, and these from nearly every county of the state; some of those most thinly settled taking the most interest in the matter.

From C. W. Murtfeldt I received a letter saying, that we would have to look to the western part of the state for interest in this branch of work, and perhaps we will, so far as St. Louis county is concerned, but not for some of the others. We can do it if they will not help us, and we will show them so one of these days.

Isidor Bush also wrote that he did not know any prominent horticulturist in his county, and as long in business as he has been. But I say if they do not wish to help us, we will do it ourselves, if we will only unite, and work together.

I then had a lot of circulars, Nos. 3 and 4, printed for the purpose of getting reports and finding if any one would become members. They were sent out and many reports were given on No. 4, and thirteen answered No. 3 and became members.

These circulars read as follows:

CIRCULAR NO. 3.

MISSOURI STATE HORTICULTURAL SOCIETY, }
SECRETARY'S OFFICE, }
WESTPORT, MO., 188.. }

MR.....

DEAR SIR:—It is our earnest desire to get all the horticulturists in our state in communication with the State Society, that we may get reports from every part of the state, send information to them, and help them get acquainted and in sympathy with each other.

To do this you should become a member of the State Society, and induce others to do so also.

It costs but \$1.00 per year, and entitles you to the reports of the State, which are full of information, neatly printed and bound, and will be sent to all those becoming members.

Please act on this at once. We should have five hundred members at least.

L. A. GOODMAN, Secy.

CIRCULAR NO. 4.

MISSOURI STATE HORTICULURAL SOCIETY, }
SECRETARY'S OFFICE, }
WESTPORT, MO.,188.. }

DEAR SIR:—Will you please fill out this blank and return it to this office without delay? It is important that we should have a complete report from the entire state, so please do not neglect it.

Give names and address of prominent fruit-growers in your vicinity:

NAME.	ADDRESS.	COUNTY.
.....
.....
.....

No. acres in bearing orchards.....	
“ “ orchards not bearing.....	
“ “ apples, bearing.....	not bearing.....
“ “ cherries, “.....	“ “.....
“ “ grapes, “.....	“ “.....
“ “ strawberries, “.....	“ “.....
“ “ peaches, “.....	“ “.....
“ “ other fruits, “.....	“ “.....
“ “ raspberries, “.....	“ “.....
“ “ blackberries, “.....	“ “.....

Amount of fruit produced in 1882:

Apples.....bush.	Grapes.....lbs.
Peaches.....bush.	Raspberries.....qts.
Cherries.....qts.	Strawberries.....qts.
Other fruits.....	Blackberries.....qts.

No. acres Cultivated Land.....	
“ Forest Land.....	
“ Prairie Land.....	
“ Planted in Forest Trees.....	

What kinds forest trees planted and proportion of each?
What fruits succeed best?
What three varieties succeed best?
Apple.....
Peach.....
Cherry.....
Other Fruit.....
Grapes.....
Strawberries.....
Raspberries.....
Blackberries.....
Have you a Horticultural Society?.....

If not, can't you organize one?.....
 How many horticulturists in your place?.....
 How old is the oldest orchard?years.
 How often do apples bear?.....
 How often do peaches bear?.....
 What are the crop prospects for 1883?.....

Any other suggestions or information will be gladly received.

Please send me the reports of your Horticultural Society every month.

L. A. GOODMAN, Secy.

Many answers to the per cent. of fruit were given very low, and thus threw our per cent. way down to 36; some giving the crop as almost nothing, others putting it as high as 80 per cent. This was not made out until August 15th, and then the crop was being gathered. The result shows just about what was predicted—as many orchards were nearly bare. The results of these were published in Circular No. 5, and sent to every county paper in the state, and all through other states. The reading of this is as follows:

CIRCULAR NO. 5.

MISSOURI STATE HORTICULTURAL SOCIETY, }
 SECRETARY'S OFFICE, }
 WESTPORT, MO., August 15, 1883. }

We give below the percentage of the fruit crop for the year 1883, taking 100 as the standard for a full crop:

Apples.....	36 per cent.	Cherries.....	40 per cent.
Pears.....	28 “	Raspberries.....	60 “
Peaches, (in south part		Blackberries.....	27 “
of state,).....	65 “	Strawberries....	65 “
Peaches, (in north part		Grapes.....	70 “
of state,).....	0 “	Plums.....	40 “

Prospects for apples were much better two months ago, and we could then have given an average for the state of about 65 per cent. But insects and winds have caused many to drop, and our average will not now run over 36 per cent. Prices for good winter fruit will be high, and it will pay every fruit-grower to take the best of care of his winter apples.

Kansas reports 62 per cent. on apples, but this report was given one month since; would be considerably cut down, probably one-half, at the present time; other states probably the same.

The following is the per cent. of apples in other states, as obtained from the most reliable sources, reported one month since:

Kansas....	62 per cent.	Michigan.....	65 per cent.
Iowa.....	50 “	Ohio.....	65 “
Illinois.....	58 “	West New York....	80 “
Indiana.....	70 “		

Respectfully,

L. A. GOODMAN,
 Secretary.

Complaint was sent in, more especially from other states, that the report was too low an average, but most of our own state gives the result as about correct.

In September, the Treasurer, J. C. Evans, the President, S. M. Tracy, and myself, decided to make a show of fruits at Philadelphia at the meeting of the National Pomological Society. Collections of fruits were made at Kansas City, Nevada, Morrison, Oregon and Bushberg. Promises were given from Columbia and other points. Apples and pears were expressed from Kansas City, but through failure of the express company, they did not reach their destination in time for the meeting. The box sent by Maj. Ragan, from Independence, also failed to reach there, until too late for any good to us as a state society. The box of grapes from Jacob Rommel, of nearly all new varieties, were opened but in bad shape. What were not damaged, attracted great attention, as new grapes always do, and among all the new varieties there shown, one or two of his new seedlings were closely inspected. I was sorry that I could not give answers to all the questions as they came up; but not being acquainted at all with the growth or hardiness of the varieties, I could do nothing but say they were good, or would not have been there. The box of peaches received from the Vernon County Horticultural Society were very fine and large, and came through in good condition. You could hardly make the eastern people believe that they grew so near the Kansas line. They were admired and kept me busy answering questions about them, whether we could grow peaches in southwest Missouri, and seemed perfectly astounded, when I told them that they hardly ever failed. One box of apples and pears reached me in very good condition, and some of the finest specimens of apples ever seen in that country, were on our tables. Some evenings they kept me busy answering questions until I left the room.

The Huntsman, Lawver, Ben Davis, Fall Pippin, Belleflower and Seek-no-further were the choice of all who saw them. And the hardest work was to give them to understand that they grew in western Missouri.

The worst of all my report is to say that we did not get a premium or a medal, and it was not our fault; for if our fruit had arrived, we could have taken a number.

It was a remarkable meeting, and it was my good fortune to meet many of those old writers of whom we have read these many years. Mehahn, Lyon, Barry, Berkman, Manning, Hubbard, Quinn, Beal, Garfield and hundreds of others would make a good

meeting, of course they would, how could it be otherwise, and it was certainly a treat to listen to them.

About the Horticultural Hall, there were many things pleasant. A hall owned by the society is something to be proud of. And how this hall was filled. The large audience room was filled as full as could be with plants. Four tables the whole length of the building for plants, and the whole of the stage for the cut flowers, (a paradise of beauty.) Thousands of dollars of cut flowers and designs were there, and it would be useless to undertake to describe them, from the beautiful bouquets, the basket of roses, the chair of tube roses, the steamboat of rose buds, the window and curtains and beds in front of it of all kinds of flowers, the crosses, wreaths, pillars, monuments, doves, pillows, chairs, Bibles, and last and finest of all, the pulpit, stand, background, pillars and panels. The Bible, chair, and words there shown, all proved the skill of the workmen. A finer sight I never saw, or expect to see, in cut flowers. Beauty and fragrance everywhere, until one was bewildered and could only admire. Flowers in front, behind, and all around you. You would look at them once, and then come back again, and again, to admire them.

But we must come back to our work. I dislike to leave it and take up the every day labor. But we need work, and have to do it if we make our state what it should be in the line of horticulture. We have one of the best, if not the best, of all the United States, and all we want is for this to be known, and then invite people here. There is no use of people going farther west. Here is plenty of room, let us give them a welcome. Let us show them that we have the choicest bit of land in the United States, and one of the best climates, and above all, let us treat them as if we wanted them to stay with us.

Now about our society itself. We must become better organized. We have a membership now, so that we can have standing committees appointed for the year, and they must make written reports every year, or at every meeting, if held oftener. We want, therefore, the following committees:

Committee on Orchards.

Committee on Stone Fruits.

Committee on Small Fruits.

Committee on Vineyards.

Committee on Vegetables.

Committee on Flowers.

Committee on Ornamentals and Landscape Gardening.

Committee on Entomology and Ornithology.

Committee on Botany.

Committee on Nomenclature.

Committee on New Fruits.

These committees should consist of three members each, and the chairman should be held responsible for a report at every meeting. It would be better still, if he could have every member of his committee make a report also. These reports, if well made and carefully attended to, would be one of the most valuable features of our report. Let us have these committees this winter, and give us their reports semi-annually.

Another matter is the meeting of our society semi-annually. We should by all means have a summer meeting, and this is the time and place to make arrangements for such a meeting this summer.

The names of our fruits is a matter that needs attention. This was presented by President Wilder in his address to the American Pomological Society, at its last meeting. Let us cut off the names of the fruits, and only use a short and decisive name; have no more outlandish names, and if we ever have any new fruit by all means give it some name that will express the quality or class of fruit, or the originator, without any surplus name following. "Beauty," "Pippin," "Nonsuch," "General," "Prince," Colonel," "Buerre," "Seek-no-further," and hundreds of others as bad, are entirely superfluous. Let us drop them entirely.

PRESIDENT WILDER,

In his recent address before the American Pomological Society at Philadelphia, treats this subject in a manner not to be misunderstood, in the following language:

"Let us have no more Generals, Colonels or Captains attached to the names of our fruits; no more Presidents, Governors or titled dignitaries; no more Monarchs, Kings or Princes; no more Mammoths, Giants or Tom Thumbs; no more Nonesuches, Seek-no-further, Ne Plus Ultras, Hog-pens, Sheep-noses, Big Bobs, Iron Clads, Legal Tenders, or Stump-the-Worlds. Let us have no more long, unreasonable, irrelevant, high-flown, bombastic names to our fruits, and if possible let us dispense with the now confused terms of Beurre, Doyenne, Pippin, Seedling, Favorite and other like useless and improper titles. The cases are very few where a single word will not form a better name than two or more. Thus shall we establish a standard worthy of imitation by other nations, and I suggest that we ask the cooperation of all pomological and horticultural societies in carrying out this important reform."

The journal publishing the above adds: "We may add that the most fitting and appropriate names are those which indicate the quality of the fruit, as Yellow Harvest, Red Juneating, English Russet, Fall Orange and Willow Twig; and next to these are names indicating the place of origin, as Virginia Crab, Cumberland Spice, Virginia Greening, Tewsbury Blush, Magog Redsteak and Jersey Sweeting. Nearly equal to these in appropriateness are the names from distinguished pomologists, as Manning's Long Blue, Prince's Gage, Knight's Early Black and others."

The following are their rules; let us adopt them:

RULES OF THE AMERICAN POMOLOGICAL SOCIETY.

At the recent meeting of the American Pomological Society held in Philadelphia, Mr. J. B. Rogers, of New Jersey, made the following motion, which was unanimously adopted: "That the Secretary of this society be instructed, at an early day, to send copies of our rules, and the portion of the president's address referring to the names of fruits, to all kindred societies in America."

The rules adopted, and the portion of the president's address referred to in the vote, are as follows:

NAMING AND DESCRIBING NEW FRUITS.

RULE 1. The originator or introducer (in the order named) has the prior right to bestow a name upon a new or unnamed fruit.

RULE 2. The society reserves the right, in case of long, inappropriate, or otherwise objectionable names, to shorten, modify or wholly change the same, when they shall occur in its discussions or reports; and also to recommend such changes for general adoption.

RULE 3. The names of fruits should, preferably, express, as far as practicable, by a single word, the characteristics of the variety, the name of the originator, or the place of its origin. Under no ordinary circumstances should more than a single word be employed.

RULE 4. Should the question of priority arise between different names for the same variety of fruit, other circumstances being equal, the name first publicly bestowed will be given precedence.

RULE 5. To entitle a new fruit to the award or commendation of the society, it must possess (at least for the locality for which it is recommended) some valuable or desirable quality or combination of qualities, in a higher degree than any previously known variety of its class and season.

RULE 6. A variety of fruit, having been once exhibited, ex-

aminéd and reported upon, as a new fruit, by a committee of the society, will not, thereafter, be recognized as such, so far as subsequent reports are concerned.

COMPETITIVE EXHIBITS OF FRUITS.

RULE 1. A plate of fruit must contain six specimens, no more, no less, except in the case of single varieties, not included in collections.

RULE 2. To insure examination by the proper committees, all fruits must be correctly and distinctly labeled, and placed upon the tables during the first day of the exhibition.

RULE 3. The duplication of varieties in a collection will not be permitted.

RULE 4. In all cases of fruits intended to be examined and reported by committees, the name of the exhibitor, together with a complete list of the varieties exhibited by him, must be delivered to the Secretary of the society on or before the first day of the exhibition.

RULE 5. The exhibitor will receive from the secretary an entry card which must be placed with the exhibit, when arranged for exhibition, for the guidance of committees.

RULE 6. All articles placed upon the table for exhibition must remain in charge of the society till the close of the exhibition, to be removed sooner only upon express permission of the person in charge.

RULE 7. Fruits or other articles intended for testing, or to be given away to visitors, spectators, or others will be assigned a separate hall, room, or tent, in which they may be dispensed at the pleasure of the exhibitor, who will not, however, be permitted to sell and deliver articles therein, nor to call attention to them in a boisterous or disorderly manner.

COMMITTEE ON NOMENCLATURE.

RULE 1. It shall be the duty of the President, at the first session of the society, on the first day of an exhibition of fruits, to appoint a committee of five expert pomologists, whose duty it shall be to supervise the nomenclature of the fruits on exhibition, and in case of error to correct the same.

RULE 2. In making the necessary corrections they shall, for the convenience of examining and awarding committees, do the same at as early a period as practicable, and in making such corrections they shall use cards readily distinguishable from those used as labels by exhibitors, appending a mark of doubtfulness in case of uncertainty.

EXAMINING AND AWARDED COMMITTEES.

RULE 1. In estimating the comparative values of collections of fruit, committees are instructed to base such estimates strictly upon the varieties of such collections which shall have been correctly named by the exhibitor, prior to action thereon by the committee on nomenclature.

RULE 2. In instituting such comparison of values, committees are instructed to consider: 1st, the values of the varieties for the purposes to which they may be adapted; 2d, the color, size, and evenness of the specimens; 3d, their freedom from the marks of insects and other blemishes; 4th, the apparent carefulness in handling, and taste displayed in the arrangement of the exhibit.

T. T. Lyon, South Haven, Mich.; John A. Warder, North Bend, Ohio; J. J. Thomas, Union Springs, N. Y.; C. M. Hovey, Cambridge, Mass.; P. J. Berckmans, Augusta, Ga.; committee.

OTHER MATTERS.

The report of the State Society for 1882 was sent me for distribution. With the exception of the few of the 900 copies sent to the different horticultural societies, they were all sent to the names of those obtained during the summer. One thousand copies is not enough for our state and for sending abroad. We should have at least two or three thousand. I hope we can get our next legislature to give us a little more money and then print our book besides, or give us enough to print it ourselves. They should give us enough to publish as good a report as any of the western states.

Our counties should organize societies and become helpers to the State Society in reports, in exhibits, and in other work the State Secretary has to. It could then be done much better and easier than it is now done. All I want of our members is to stand by me in this work, and I am satisfied that in a year or two, we can be as well organized, as any of the other states. But it will take steady and hard work. We have hereabouts, one of the very best fruit belts in the United States, and it behoves us to take care of it; not only so, but to let others know it, so that they will help build up our state.

Our constitution needs a change, so that we can have our standing committees appointed at this time and place, and a demand can be made upon them for reports semi-annually. Then we want one, or two, or three, from each county, to make out the estimates of our fruit crop for each year.

Another matter, our legislature will give us what we want if we

have enough of our horticulturists make the demand of them. We will be heard when we speak if one thousand of us speak together.

Some displays of fruit that the Missouri Valley Horticultural Society have made have done more to bring buyers to this state than any other one thing.

One work of the Society should be an attempt to have our school yards ornamented with trees and shrubs. The Michigan Horticultural Society has helped them in this matter and it is one of the educational features, as well as a pleasure. Probably we cannot attempt this until we are in a better organized condition.

We have now on our list of horticultural societies: The Missouri Valley, Kansas City; Jasper County, Carthage; Vernon County, Nevada; Bates County, Butler; Holt County, Oregon.

I want not only the names of the officers, but of all the members, of each society.

INSECTS

Are beginning to be most too plentiful, and we must begin to fight them. This matter each one must do for themselves, and let every such experiment be reported to the State Society, whether a failure or a success.

PYRETHUM.

I will present this substance, as it now seems to be the best of all substances for some of our work. Under this head I give Prof. Cook's idea of its use and value:

"This substance, the powdered flower heads of plants now extensively grown in some portions of our country, is a certain specific against insect pests. I have found to dust it on the cabbage with a dust bellows, even though diluted with twenty times its bulk of flour, means death to nearly all the worms. If we use a fountain pump, and force it on the plants, mixed with water—one table-spoonful to two gallons of the liquid—I find it even more efficient to destroy, only, however, because, as I think, it touches more of the insects. I have found that forced on plants already headed, in this way, it kills nearly all the larvæ with a single application. Now that we can get this insecticide, pure, right from the growers in California, for seventy-five cents per pound, there is no excuse for using poisonous compounds to kill these pests. It is worthy of remark that while pyrethrum kills insects, by contact, serving to paralyze them, it is not at all poisonous to man or the higher animals. I have fed it to a dog with no evil results to the brute, while a friend

of mine tells me he ate a table-spoonful without even impairing his digestion."

This substance does not kill insects, because they eat it, but it kills by contact. The least particle sprinkled upon them causes them to die. The potatoe bug and cabbage worm it will destroy immediately. It seems to have a charm, and that to kill all insect life. For insects in the house, it is the best thing that can be used. Used with the bellows in a room closed up tightly, it will destroy flies and mosquitoes. In fact, it is an insect destroyer, sure and complete. We add the following extracts:

"Pyrethrum, or "Persian Insect Powder," bids fair to be the best of insect exterminators. The powder is cheap, poisonous only to insects, and very effectual. At the experiment station at Amherst they mix a tablespoonful of the insect powder in a pailful of equal parts of water and buttermilk, and sprinkle it on currants, potatoes, or other plants infested with bugs or worms. The buttermilk makes the powder stick to the plant, and in about half an hour the insects get a good mouthful of it, curl up, drop to the ground and die. Should it prove effectual to the rose-bug on grape vines, Pyrethrum will certainly be a blessing. The plant is easily grown in gardens."

"The insect powders of commerce are the powdered flowers of different species of pyrethrum. Those of *P. carneum* and *roseum* were introduced twenty or thirty years ago under the name of Persian insect powder, and, within a much more recent period, those of *P. cinerariæfolium* under the name of Dalmatian insect powder. Both of these powders are good insecticides, and, hence, commands the highest price. The Pyrethrums are hardy plants, which bloom abundantly the second year from seed. The powder is prepared from the half opened flowers, gathered during dry weather, and dried in the shade under cover.

"House flies are very sensitive to the influence of these powders, and a few puffs of the dust, blown into the air of a room, with closed doors, the discharges being directed toward those parts where flies congregate, will stupefy and paralyze them within a few moments so that they will all be found on their backs, struggling on the floor, and injured to such a degree that very few ever recover the power of flight again. They are also extremely useful in destroying cockroaches and other household pests, and, used in the same manner in a green-house, but a little more freely, they have a similar effect on plant lice."

"Prof. Riley, giving the result of some experiments with this California Pyrethrum powder on the cotton worm, states that the

slightest puff of the powder causes the worm to drop almost instantly from the plant, and insures its speedy death. Besides using the powder pure, he used it mixed with a small quantity of resin, and also tried it diluted with ten times its weight of flour, and says that when thus diluted, 'it produces equally good results as when pure.' This is indeed a most unexpected result, and it seems difficult to understand how a powder of this sort can, when mixed with ten times its weight of other substances, be equally efficient with the undiluted substance. It is also asserted, that a strong decoction of the powder with water produced no appreciable effect, but that an alcoholic extract mixed with water in the proportion of one part to fifteen or twenty of water, and sprayed on the leaves, was very efficacious in killing the worms."

In making out my report I expect to have what I call "The Secretary's Budget." This will consist of the best hints, notes or essays that have been published in the best horticultural journals of the day for the last year. From such as *Country Gentleman*, *American Agriculturist*, *Prairie Farmer*, *Colman's Rural*, *Western Rural* and many others, I have been clipping, for the past year, such items as I consider of great value to everyone growing fruit, and as such will present them, often times with a comment for our western states that will be of more service to us here at home.

Such I shall not attempt to give at present, and only one, which I consider of extreme value, may come in at present, as being just the time to use it, and I can speak of its value, having tested it.

A FRUIT TREE WASH.

"For the past twenty years," writes William Saunders to the *New York World*, "I have used a mixture of lime and sulphur for a wash for the prevention and destruction of fungoid growths on all kinds of fruit trees, and with decidedly beneficial effects. It is now well ascertained that many of the diseases of both vegetables and animals are due to fungoid growths, and sulphur is the best known and one of the most potent antidotes for the mycelium and spores of microscopical fungi, and the most practical mode of using it is as an ingredient in the ordinary lime wash, applied to fences and external woodwork. As a sanitary auxiliary in cities, its employment will become general as its usefulness in the prevention of zymotic diseases becomes known. If every fence, tree-box, out-building or rough wooden structure in this city could at once receive a coating of this wash, it would greatly check the spread of malarial disorders. It is

not costly, and the sulphur imparts additional adhesive qualities to the mixture." "The wash is prepared by placing half a bushel of fresh burned lime and eight pounds of powdered sulphur in a tight qarrel, slacking the lime with nearly boiling water, the mouth of the barrel being covered with a cloth. When cool it is ready for use as ordinary whitewash."

I would apply this now or at any time during the winter that it is not freezing weather.

HELPS NEEDED.

With reference to our list of fruits adopted, as to time of ripening. It is necessary that we have a western standard for our apples, so that when we call apples fall apples, they will be such, not summer, and winter apples will be winter, not fall. It seems to me that we can have this list revised and perhaps some new ones added, with their time of ripening. To do this I think that it would be a good plan to refer it to the Orchard Committee. Farther reference to this matter, as well as some others, will be treated in our report. For the present it is enough for me to ask you all to help in this work of letting our state be known as an horticultural state and a good place to come to.

One very especial matter, and one which the secretary needs most, is a library. We should have the reports of every state society and keep them on file. We should have the reports of our State Society for the last twenty-five years. Cannot we get them and does any one know about it. We should have some standard works on specialities for reference, and these should belong to the Society, and we should have some place of keeping them. I hope a collection of these can be made and kept for the benefit of the Society.

Another subject I have in mind: after this meeting it is the intention of your secretary to prepare a constitution and by-laws for the use of local horticultural societies. This will be printed and sent to any who wish to organize a county horticultural society and an effort will be made to get many others of our counties to organize. When this is done you will see how much easier it will be to get our State Society together and have an interesting and profitable time.

This meeting is a begining of what we will do in the future, if you will help. Will you do it?

L. A. GOODMAN,
Secretary.

The report of the treasurer shows us in good financial condition and able to do far more than we are doing in state work. Money could be used in helping organize county societies in different parts of the state, and it is for the Executive Committee to decide if it shall be done. Part of this could be used to advantage in making exhibits, and probably the society will attempt one to be held in New Orleans in 1884 and 1885, beginning in December.

TREASURER'S REPORT.

1882.			
Dec. 21.....	Balance on hand.....	\$ 572 00	
Dec. 27.....	Received from State Treasurer.....	1,250 00	
Dec. 22.....	Paid premiums, State Meeting.....		\$ 75 00
Dec. 27.....	Paid Sec. Tracy, salary.....		200 00
1883.			
March 1.....	Expense to New Orleans.....		245 00
Aug. 24 ...	Expense to Philadelphia.....		200 00
Sept. 20....	Express.....		3 00
Oct. 21.....	Printing Reports.		154 86
Dec. 15.....	Paid Secy. Goodman, salary.....		200 00
Dec. 15.....	Paid Secy. expenses, printing, etc.....		151 95
		\$1,822 00	\$1,229 81
1883.	Leaving balance Dec. 15th.....		592 19
			1,822 00

J. C. EVANS, Treas.

WINDOW GARDENING.

BY ROBERT S. BROWN, KANSAS CITY.

First, to be successful, we must begin with healthy plants. They should be prepared in the summer months if wanted for bloom in winter. As a general thing, plants are left out until there is danger of frost, then they are taken up and put in pots, boxes or anything that happens to be handy, and in most cases put in pots two or three times too large for them, supposing an abundance of soil and plenty of water is all they want, when, in fact, they are killed with kindness by the over-zealous amateur.

When plants are taken up the soft wood should be taken off, or, if not too soft, cut back one-half or two-thirds; prune off head shoots and cut back one-fourth or one-third of hard wood; dig up carefully, to save the roots, shake off all the soil and put in pots as small as plants will go in, using good soil; give a thorough watering and set away in some cool place until you see signs of growth. As soon as pots are full of roots, shift to larger pots.

But the best way is to take off cuttings of geraniums, coleus, fuchias, or any of the soft-wooded plants, August 15th to 20th, or even in September. They will soon root if put in a cool, shady place, north side of house or fence, being careful to watch them and see that they do not wilt or dry up. As soon as rooted, pot off and keep on growing. By the middle of November, many of them will be in bloom if handled properly. Now for their winter quarters. Most plants like sunshine, and don't forget that plants that can't stand sunshine in summer, can bear all they can get in winter. The following are among a few of our best for winter bloom: geraniums, carnations, heleitrope, primroses, hyacinths and begonias. All varieties of plants named will do well in window gardening with sunlight, heat and moisture. The night temperature can drop to 40° without hurt, and during the day can run as high as 90° or 100° even, which you will hardly get unless the day is very warm and a good fire in the room, then plants should be aired overhead by dropping the sash. It injures plants to let the cold air blow direct on them.

Don't try to crowd too many plants in one window. Better have a few good specimens, nicely in bloom, than a window full of sick plants, struggling up through the jam for light. A very pretty window can be arranged in most houses, even if you have no bay-window. In place of pots use a window box, say eleven inches wide by six deep, the length the window is. Plant a vine in each corner; English ivy does well and parlor ivy gives good results; train up the sides of the window. In center of box plant a heleitrope, with a geranium on each side, a flowering begonia next, which will be five plants. For a border use Kenilworth ivy. If more variety is wanted, use *crassula spatulata*, which will make you a nice box of flowers that should bloom and grow all winter. A hanging basket can be suspended from above with charming effect. When box is planted, give it a good watering. Afterwards only water as you see the surface of the soil needs it, then water thoroughly again.

If roses are wanted, you must be satisfied with the open flowering sorts, such as are grown by florists for the buds only: Isabell,

yellow flowers; safrano, copper color or bronze flowers; Bon Saline, carmine colored flowers; agrippina, dwarf plant, red flowers; and many others. Roses to flower well need heat, sunshine and plenty of syringing. The best plan to grow roses is to grow a box of roses, same as the window box already described. They can be showered every evening by using Schooley's plant sprinkler; as the red spider is the pest of roses, it tends, in a great measure, to keep them down.

If a more elaborate window is wanted, and a tropical effect produced, use palms, freaceneas, crotous, pandanus utilis, and a few varieties of flowering plants mixed in, with rex begonias set under the palms, all blended together, will give a good imitation of a tropical garden, and as palms are easily handled, they can be kept clean by sponging the leaves; nearly all kinds have broad leaves. They are an easy house plant to grow, but as they are somewhat slow in growth in their young state, they will cost more than the common run of plants for a window.

Suculents are fine for house or window. As all sorts have thick, fleshy leaves, they require but little water, and a window of them alone would give a good effect. Using the taller ones for center and sloping down each way would make a very pretty window. They want the reverse of treatment from the other window plants already named, as they would be ruined by too much wet. The following are among a few that will do well in window gardening: Agave or century plant, cactus of different sorts, crassulas, semperviviums, echeverias, staphelias; any or all will flourish with but little care.

The Secretary gave a list of plants which were considered best for a window, and are those which give better satisfaction for the majority of people. It is better to have a few plants well grown, than too many to crowd up a window: 1. Scarlet geranium. 2. Rose geranium. 3. Heliotrope. 4. Fuschia. 5. Calla. 6. Double geranium pink. If more are wanted, would add a couple of roses, *one Tea and one Noisette*.

Next followed an essay on

NEW AND RARE FRUITS.

BY DR. J. STATMAN, LEAVENWORTH, KANSAS.

It has often been said, and with some propriety, that our list was already too large and should be reduced. While this may be true, it does not follow that we have no better variety to introduce. As we are not restricted to any species of fruits, our remarks will embrace a few of the most desirable of several species, neither do we expect to be strictly confined to new kinds, but rather to those most valuable, whether old or new, for if new fruits have not as much merit as older varieties, they are unworthy introduction.

With these few preliminary remarks, we shall begin with the apple, and give a short description of them with outline cuts of the same which will better illustrate our subject. To do so. we will commence first with those of light color, in the order of their maturity.

Summer Extra.—Fruit medium to large; roundish ovate; color light yellow, with a pink blush; flesh yellowish white, tender, juicy, pleasant subacid; very good; season August; tree a strong, handsome grower, an early and profuse bearer; origin, Kentucky.

Kansas Belleflower.—Fruit large, roundish, conical; color clear light yellow, transparent, with a faint blush; flesh yellowish white, very tender, juicy, sprightly, mild subacid; very good; season September to February; tree symmetrical, hardy; an early and abundant bearer; a seedling of the Ortley, by B. Atkinson, Leavenworth; larger and better than its parent.

Mason's Orange.—Fruit large, roundish oblate, slightly conic; color deep yellow, often with a faint blush; flesh yellow, very tender, juicy, sprightly, aromatic, mild subacid; very good to best; season October to March; originated at New Lancaster, Kansas, with John L. Mason, from the seed of the Yellow Belleflower; tree thorny, vigorous; an annual and good bearer; a very promising apple.

Large Golden Pippin.—Fruit large to very large; from round, regular; color greenish yellow, becoming at maturity a rich golden yellow, often with a bronze blush; flesh yellow, rich, tender, juicy, crisp, sprightly, aromatic, mild subacid; very good to best; season December to April; tree strong grower, an early and good bearer. This is much the finest apple of all the Pippin family, and a very desirable apple; origin Pennsylvania, upwards of a century ago, yet it has never been disseminated or known outside of its immediate

neighborhood. We were acquainted with it more than sixty years ago. The trees were then perhaps forty years old, as they were very large, perhaps a foot or more in diameter eight or ten feet from the ground, the usual height then in heading trees. We have been unable to find this apple in any other orchard or in the hands of any party, and it's unknown to Charles Downing.

Summer Rambo or Grash.—Fruit large to very large; form oblate, sides often unequal; color yellowish green, considerably mixed, splashed and striped with red; flesh yellowish green, very tender, juicy, sprightly, pleasant subacid; good to very good; season August to September; originated at Marietta, Pa.; tree strong, upright, spreading; an early and good bearer. This apple is exactly like the Western Beauty in size, color, quality and growth of tree, but is about a month earlier in maturing.

Howsley's Lady-finger.—Fruit medium to large; form oblate conic, regular; color light yellow, covered, mixed, splashed and striped with brilliant crimson and carmine, very handsome; flesh white; tender, juicy, sprightly, mild subacid; very good; season September to October; originated with the late Dr. Housley, of Leavenworth, from the seed of Lady-finger; a good bearer and a very showy apple.

Red Cedar.—Fruit large to very large; form roundish, oblate conic, slightly oblique and ribbed; color light yellow, mixed, splashed and striped with light and deep red, handsome; flesh yellowish, moderately juicy, sprightly, brisk subacid; good; season September and October; tree erect, spreading, vigorous; very productive; a handsome large, salable apple; supposed to have originated in Kentucky.

Kentucky.—Fruit large; form roundish conic; color yellow, mostly covered, mixed, splashed and striped with red; flesh yellowish, tender, fine, juicy, crisp, sprightly subacid; very good; season September to October; origin Kentucky.

Dr. Housley.—Fruit large; form oblate, regular, slightly conic; color light yellow, entirely covered, mixed, splashed and striped with bright crimson and carmine; very handsome; flesh yellowish tinged with red, tender, juicy, sprightly pleasant subacid; good; season October to February; a seedling of the McAfee, by the late Dr. Housley, of Leavenworth; tree vigorous, upright, spreading, productive; an apple of great beauty and attraction, and must command a good price.

Ben Pepper.—Fruit large; form oblate conic, indistinctly ribbed; color greenish yellow, covered, mixed, splashed and striped with

light and dark red, handsome; flesh yellowish white, tender, fine, juicy, very mild saccharine subacid; very good; season December to April; origin Adams co., Pa.; tree vigorous, upright, spreading; an early and profuse bearer, we have seen this variety bear full when nearly every other variety was a failure.

Nelson.—Fruit large; form roundish oblate, ribbed, sometimes angular and oblique; color light yellow, considerably covered mixed, splashed and striped with bright crimson, handsome; flesh yellowish white, tender, juicy, mild pleasant subacid; very good; season December to March; originated with N. P. Nelson, Buchanan co., Mo., from the Ortley; took the premium as the best seedling at St. Joseph Fair last season; said to be very productive.

Stayman's Winesap.—Fruit large; form oblate conic, regular; color greenish yellow, mostly covered, mixed and indistinctly splashed and striped with red; flesh yellow, fine, very juicy and tender, melting, rich, mild pleasant aromatic subacid; quality best; season December to May; originated here from the seed of the Winesap; tree very vigorous and healthy, irregular, spreading grower, dark bark and foliage; a very early and profuse annual bearer. We consider this the best and most valuable apple in cultivation. It is not only a fine dessert apple, but it is not excelled by any other as a cooking apple, being so rich and tender, and requiring so little sugar.

We have many other new varieties of promise, but the above must suffice for the present.

We have no new pears in bearing that we can recommend. The Japan Hybrids look promising, and also our Century Pear, which has stood over a hundred years at its home in Pennsylvania, has borne profusely and has shown no blight or disease. It appears to be blight proof here.

Missouri Mammoth Quince.—Fruit very large; form roundish ovate, conic ribbed; color, deep lemon yellow; flesh yellow, tough, pleasant, subacid; strong quince flavor; season, October to January. This is the largest and finest quince that we have seen. Origin unknown.

Orange Quince of Pennsylvania.—Fruit large to very large; form roundish, oblate ribbed; color rich golden yellow; woolly; flesh yellow, firm, rather tough, rich, pleasant, subacid; best; origin, Pennsylvania; tree a good grower and bearer; a much better quince than the common one; season, October to November.

Among the grapes we have very many new ones, but few that are worthy of cultivation. There is no black grape of the pure la-

brusca class that is superior to the Concord, except those of Mr. Burrs'. The Early Victor has proven all that was claimed for it, and is a good, productive, hardy, early grape.

Burrs' Early is, however, a better grape, and is about a week earlier. The bunch and berry is so nearly like the Early Victor, that it might be mistaken for it. The growth of cane and foliage are, however, very different. It has borne the heaviest crop of any grape on our grounds this season, and, up to the present time, is the most valuable early grape we have.

Burrs' General Pope is, so far as we are able judge, the best late black grape yet introduced. It is perfectly healthy and hardy; a very strong grower of the astavilis class, and very productive. The bunch and berry is not quite as large as the Concord, but in every other respect much superior, being pure, sprightly, rich, vinous sweet, without any foxiness.

Burr's No. 9 is without a rival among red grapes. It is also of the estivalis class, and from the same parentage of General Pope and Burr's Early. It is as large as the Catawba, if not larger, of the color of the Delaware, and superior to either. It is not only perfectly hardy and healthy, but the most promising grape that we have yet seen. His Nos. 10 and 11 appear to be close competitors, of about the same size, color and general appearance.

The Lady Washington is a grape of fine appearance; bunch large; berry medium; of good quality, but of no value in our climate, being too tender and subject to rot.

The Prentiss, we fear, is not hardy enough, from what we have seen, but a fine grape and worthy of trial.

The Vergennes has far surpassed our expectations, and we are very favorably impressed with it. It is a very vigorous grower; appears healthy and hardy; bunch medium; berry large and of good quality.

The Jefferson has also proven better than we had expected, and if it continues as well, will prove valuable. It is the most promising of Mr. Ricketts' seedlings.

The White Imperial, so far as we are able to judge, is the best white grape that we have seen. It is a strong, short-jointed grower, and more hardy than the Concord. The bunch is large, berry medium and of the finest quality, without any foxiness. We consider it a very valuable grape.

We have not yet found a hybrid grape that we can recommend. The Triumph is the best with us, but needs winter protection.

Of strawberries we have but few new varieties that are as good

as the Crescent and Charles Downing. The Manchester is large, productive, but does not appear to withstand our summer heat. The same may be said of the Big Bob. The Jersey Queen is large and fine, but does not prove very productive. The Mount Vernon and Bidwell do not appear to be as good as some of the old varieties. The James Vick appears vigorous and healthy, but has not yet fruited. The same may be said of several other new varieties.

Of blackberries we have but few new candidates to offer. The Taylor is better than the Snyder, and neither are better than many of our wild varieties. The Ozark is better than either and more productive. Staymas' Early is the earliest variety that we are acquainted with, of excellent quality and is productive.

Of raspberries we have a large list of new varieties and some very valuable. Among the black caps the Gregg is the largest and best late variety. The Souhegan is nothing but the Doolittle improved, so far as we can judge; at least it is no earlier, no larger, no darker; neither is it more productive or of better quality; it is identical in growth, spines and foliage. The Tyler is a valuable early variety that ripens with the Burns and immediately after the Thornless. The Hopkins is a strong, vigorous, thorny grower, of good size and excellent quality but not as early as the Doolittle, it fills the place perhaps of the Miami. The Duncan is a late variety of large size, but we prefer the Gregg. Shaffer's Colossal is a monster in growth and berry, but the color is not attractive and will not sell, but for canning it is good. Early Prolific is the best early black cap that we have seen. It is a very strong grower, nearly thornless, very hardy, healthy, enormously productive and of best quality. It is as large as the Souhegan, and has proven three to four days earlier, grown by its side. It is considered the best on our grounds. Of red raspberries the Crimson Beauty is much the best of any that we have tried, being finer in quality than the Turner, more productive and of larger size. The Superb did not prove hardy last winter and the color is too dark to become popular. It is much after the type of the Reliance. The Cuthbert is a strong irregular grower, not altogether hardy, not of good quality or color and not very productive. We cannot recommend it. The Lost Rubies was killed nearly to the ground last winter. The quality is too acid and is not productive. The Hansell has not fruited but promises well. We have a large number of new seedlings but they are not yet fully enough tested to form an opinion of their merits.

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Dr. A. Goslin said: "With me the Souhegan is as large as Gregg, two weeks earlier and is in every way desirable. I disagree with the paper in its time of ripening and find it very valuable."

Others spoke to the same effect.

The discussion of the merits of small fruits having been taken up at the beginning of the meeting, it was thought best not to take up the question again and the next subject was taken up:

PEARS.

BY J. A. DURKES, WESTON, MO.

At present, we note a decline of interest among fruit-growers of the west in planting pear trees. That the prices, at which nursery-men hold them is one of the causes, we are aware. Perhaps the want of a proper knowledge of the treatment of the fruit in marketing is a drawback to many.

But the greatest obstacle, we believe, is the blight. Truly this scourge has been the cause of disappointment to many, in hopes of bountiful returns for care and labor bestowed. Who after waiting and nursing with tenderest care for three or five years, his Tysons, Bartletts, or DeAnjous, sees them blacken and wither on some summer day, would not be discouraged, and feel like bestowing his energies on something else. This being so great an obstacle towards the successful production of this fruit, how can we overcome it. Our country is a large one, and our climate varies at every few hundred miles. The changes of winds, cold and warmth, drouth and moisture, cannot be fixed by certain rules for any locality. Again, the soil will be found to contain just those chemical properties we want for our trees in parts of a township, while others will be the reverse. Hence, we can be guided only by our own experience, or that of our immediate neighbors, comparing the methods pursued by those who have attained the best results.

After twenty years experience with the pear in our latitude, the western central part of the state, we have come to certain conclusions, which we are glad to say, of late years have been of much benefit to us. As pear trees have always been high in price, few trees were bought by the planters at large. The fruit in market always bringing a fair price, consequently the trees must have the best ground, the most cultivation, most pruning and attention of every kind, to hurry on the hoped for harvest; just the reverse needed for the results desired. As the pear tree, in its wild state, is always found on dry and well drained situations, growing rather in

isolated groups upon high plains than in forests among other species, it is an evidence that the soil, location and manner of growth, must agree as far as possible in cultivation, with what the trees love best in their natural haunts.

Therefore, we want a slow, moderate, annual growth, one to be retarded rather than stimulated, a growth that will permit every twig and bud to maturity before the frosts of October set in. In fact, let the trees in a manner take care of themselves, after two or three years of fair cultivation to give them a start. If ploughing or spading is required, let it be early in the spring. We let our orchard grow up in clover and native grass, mowing down two or three times during summer, giving a top dressing of manure on the thinnest soils. By pursuing this method, instead of losing many trees during every season, only a limb now and then becomes blighted, rarely a whole tree.

This leads us to give an example or two, in this connection, before leaving the subject of blight and some of its causes. A neighbor, an enthusiastic vineyardist, florist and gardener, who has a habit of doing everything in a first-class manner, some eight years ago, seeing our success with the pear, planted a plot of ground, which he thought just the place, with varieties which were then considered the best. Three years ago a finer lot of trees could scarcely be desired; just coming into bearing. Thus far blight only had effected a few small limbs. The ground on which these trees stood is low, rather wet and naturally rich, altogether unsuited. But to our friend this was not enough. His stable being near much manure was added and worked under, giving the trees an undue stimulus to rank growth. The result is that most of the trees have blighted and the few remaining uncertain to make trees for any good.

We will give another case which has come under our observation, bearing on this topic. Mr. Gist, living a few miles from Leavenworth City, Leavenworth county, Kansas, had in 1869 perhaps the largest and most productive pear orchard in that state. In that year his sales amounted to upwards of fifteen hundred dollars. Until then no blight had appeared to any extent, the trees being healthy and in fine order for many crops in the future. Mr. G., elated with such results from his trees, thought they deservedly must be put in better trim. Manure was hauled from the city, carefully ploughed under, and all was done that could be to enrich the soil. In three years after only a few healthy trees were remaining.

Twenty-five years ago we became interested in pear culture. In the spring of 1859 we planted five hundred and thirty dwarfs. The following spring planted five hundred more. The selection of varieties was left to the nurserymen, as we were ignorant as to the proper kinds to plant and their treatment in our latitude. To follow the modes recommended by eastern planters, we soon found would not do for us, so we veered off, and took the course spoken of in this paper.

During these years we have had some forty varieties upon our grounds. Of those that have proven the most important to us, and such as promise well for the future, we wish to say a few words. Taking them in their order of ripening, we have first the Doyenne-dete. Being the earliest, it should have a place in every collection as an amateur fruit. The Rostiezer, sometimes called the Summer Seckel, has proved a most worthy pear in every way. Too much cannot be said in its praise; an annual bearer; trees hardy, free from blight; quality of fruit the best. The Tyson is a fine summer pear; well adapted to our section; fair size and color; a good market pear for the season. Dearbon's Seedling does not succeed so well, but would like to have it in every family orchard. The Roussclet Stuttgart in our collection has proven to be one of the best. Being small, it will never gain much favor as fruit for market, but as an amateur and family pear, it can be recommended. Beurre d'Amanlis is a fine fruit, large and productive. The tree being a rank grower, it should be checked. The fruit should be picked ten days before maturing on the trees, as it is liable to rot at the core. Clapp's Favorite is a fine market pear; quite productive. Being a fast grower, the tree will require watching. Belle Lucrative, rather variable with us, but deserves a place among those here given.

The Bartlett, deservedly holds the first rank in the few that seem to adapt themselves to every part of our whole land. It stands pre-eminently the first. Since we began planting, not a Bartlett tree has been entirely lost by blight. As to the fruit, all know that it demands the highest price in market. Next to the Bartlett, the White Doyenne has proved the most productive and profitable with us. The tree is an abundant annual bearer; a good, rather upright, grower; almost entirely free from blight in any soil or situation in which we have planted it.

The Howell is a beautiful pear; has succeeded well; tree hardy and vigorous. Louise Bonne, Seckel, Buffum and Duchess have proved very good; the last, for its size, for market is especially desirable. Flemish Beauty has many points to recommend it; tree a

fine grower; even on the poorest soils, though not an early bearer. *Beurre d'Anjou* makes a large, healthy tree, standard or dwarf. An annual though moderate bearer, smooth, large fruit of highest quality. *Beurre Clairgeau* is a fine market pear, very large; tree quite an early bearer; standard or dwarf.

Of later varieties, the *Beurre Diel*, the *Lawrence*, *Beurre d'Alencon*, *Vicar*, *Glou Morceau*, *Winter Nellis* and *Josephine d'Malines* have done well. The *Lawrence*, for early winter, and the *Nellis*, for mid-winter, should not be passed by in any collection.

But to extend this list with varieties that are of later introduction, we would say, ascertain the nature of the soil and climate, planting sparingly every variety that is offered. After years of experience, a selection of those that are worthy for general cultivation can be made. Their adaptability to every neighborhood in which they were tested, will prove of the highest utility to the planters of the future, remembering that it may not be our lot to reap the benefits of our labors, but that thousands in the indefinite length of time may be profited thereby and blessed.

DISCUSSION ON PEARS.

A. W. St. John: Like many others, he thought he knew how to raise pears. Selected a piece of ground in a favorable location, just the place he thought; plowed it twenty inches deep by subsoiling; planted 400 trees, 200 standard and 200 dwarfts; took extra care of them for four years, then seeded down. Gathered three fine crops for such young trees. The fourth crop was a sight to see, but after the fruit was well set, the blight came and left very few of them. The *Duchess* and *Seckel* seem to stand the best.

Mr. Glassford thought the *Duchess*, *Sheldon* and *Seckel* are nearly blight proof; they have withstood it best of all varieties with him.

Mr. Liston: Has tried many varieties, but they are all gone now.

Dr. Morerord has lost \$400 in pears, and has found the *Duchess*, *Seckel* and *Buffum* to withstand the blight best. Thinks it is caused by a lack of ingredients in the soil, and too rapid growth. From the analysis of the soil, finds that there is something lacking, and that this must be supplied. Has tried many experiments, and finds bone dust to be the best preventative. Driving nails, cutting the bark and root pruning have failed. Thinks bone dust supplies just what is lacking in the soil to protect the tree and fruit.

Prof. J. W. Sanborn was called. He stated that he would rather not say anything upon this subject at present, as he would touch upon this to-night when treating of "Plant Food," the subject of his paper to-night.

Dr. Morerord: Prof. Burrell claims that bacteria is the cause of pear blight, but he thinks it is the result of the disease, and not the cause of it.

The Chairman would keep planting, and where one fails, plant another, of the kinds that seem to withstand the blight the best, and perhaps, out of them all, some may succeed for years to come, and be a blessing to those who follow us. Thus one out of a thousand may live to a good old age.

The Secretary thought if we plant trees to make money, we will not plant pear trees. It has been a loss to him of thousands. Of 500 trees planted ten or twelve years ago but few remain, and if for money we plant, it would have been a thousand times better to plant Ben Davis. If you plant for fun, plant pears.

Mr. B. Hall would give a place to Bartlett. Thought Duchess, Seckel, Sheldon and Bartlett would succeed in the end in favorable places. He plants wherever he cuts down a peach tree, and thinks the old roots decaying is a help to them.

LETTERS RECEIVED.

A letter was read from President Tracy, stating that it would be impossible for him to be present at the meeting, much to his regret, sickness keeping him at home.

A letter was also read from Parker Earle, President of the Mississippi Valley Horticultural Society:

COBDEN, ILL., Dec. 8, 1883.

L. A. GOODMAN, Esq:

DEAR SIR—I am just in receipt of your card asking me for a paper for your meeting next week. It is quite impossible for me to prepare anything that would give you satisfaction, as my time is all engaged by other duties. But I will write you on this page what will give you, and all the members of your society, greater pleasure than any formal paper I could write. I am just back from New Orleans, where I have been conferring with the managers of the World's Exposition to be held there in the winter of 1884-5, and I have with them perfected plans for the grandest exhibition of horticultural products that was ever made in the world. They will build a hall for that purpose, 600 feet long at a cost of \$40,000, and

have placed the entire management and organization of the show in the hands of a committee of the Mississippi Valley Horticultural Society, and will offer a premium list of \$12,000 to \$15,000 of aggregate value. We expect to exhibit the fruits of every state and territory of the Union and of every important nation on the globe. Further details will soon be published. Hoping this will make you happy, and expecting to be with you at Kansas City next month, I remain, yours truly,

PARKER EARLE.

This letter was received with cheers.

Secretary Goodman read a statement and resolutions relating to the Mississippi Valley Horticultural Society, as follows:

"It has been decided to hold the meeting of the Mississippi Valley Horticultural Society at Kansas City, January 22d, 23d, 24th and 25th, 1884, and that upon the invitation of the Missouri State Society and the Missouri Valley Society given at the last meeting at New Orleans. This society embraces twenty-two or twenty-three states, and is of national importance. In this society are the best of the western horticulturists of all these states, and this meeting will be one of unusual interest, as there will be members and a collection of fruits from Louisiana, on the south, to Nebraska, on the north; therefore,

Resolved, That the Missouri State Society send delegates, and that we make an exhibit of fruits at that meeting of the best fruits we have in the state.

Resolved, That a committee be appointed to select such specimens as may be needed for that exhibit from the tables, and that they be turned over to the State Society to take charge of until that meeting, and there be shown for the benefit of the State Society and the state at large."

The Chair announced the following as the Committee on Wine:

A. W. St. John, J. K. Glassford, Bennett Hall, Mrs. Damon, Mrs. Forbes.

Meeting adjourned until 7 P. M.

WEDNESDAY EVENING.

The meeting was called to order by the chairman, C. W. Murtfeldt.

In a few appropriate words, he introduced Prof. J. W. Sanborn, of the Agricultural College, Columbia, Mo., who read a very valuable paper on "Plant food, quality of fruit, etc." He was interrupted many times by questions from one and another. With the best of good feeling he answered them the best he could. He stated at the beginning, that "It has been within the last century that agriculture has taken the stand it now occupies. Before that we had made no progress in agriculture as a science. In fact, but few facts were established at all, and it was left to this last century to establish any laws. In 1853, Germany founded the first attempt to foster agriculture. Soon after, one was founded in France, and now there are about one hundred experiment stations in the world, and about one thousand at work, in this good work of establishing laws, or finding out facts in agriculture and horticulture. There are only six in the United States, but there will soon be sixty. Nothing can equal the labor of these one thousand workers, and the results obtained are still more wonderful. One hundred years ago, how little did we know about the elements of plant growth, and now we know that there are fourteen. Results are being obtained that will be invaluable to every one who grows plants, trees, vegetables or grains. A few will be noted in the following paper:

RELATION OF CHEMICAL COMPOSITION OF SOIL AND OF FERTILIZATION TO QUALITY OF PLANT AND FRUIT AND TO VIGOR OF PLANT.

BY PROF. J. W. SANBORN, COLUMBIA, MO.

The standard of excellence required in food materials keeps step to the advancing refinement that characterizes our civilization. Taste grows more critical as the objects or products of the soil upon which it exercises its faculty are refined in quality. History affords the amplest testimony to this fact. It recounts to us past times and present places where roots; coarse vegetation; wild, coarse, sour fruits, insects of loathsome form; and after these seeds of wild plants and our coarser grains have ministered to the hunger of the human race. It would not require a Dr. Holland to convince us that

the genus homo, thus fed, was necessarily coarse. Dr. Holland pushed the point into a more refined field, and sought to fix upon us the belief that, in our day and civilization, men might be refined through the dining hall. Whatever the cause or causes, the effect is emphatic and pronounced; cultured taste is seeking for subtle qualities; the special products of your department of agriculture in its food products, that are alone the result of the highest art of the Agriculturist, and worthy of the best faculties of the intellects of any industry.

This phase of increasing demand for quality in foods has its first application to horticultural products, and especially to fruits, and is of marked interest to you for a double reason. First, because increasing wealth enables this taste to be gratified; second, because quality requires for its realization the skill of the horticulturist in a more eminent degree.

Your Secretary suggested for me, in his request for an article, the subject of "Relation of Horticulture to Agriculture; which most profitable and which most agreeable." The present subject being more congenial to me, I selected it for short discussion.

At this point it may be proper to observe, in connection with the skill required by horticulturist to produce quality, that in the business world this axiom will apply: "The more intelligence and ability required to prosecute a business, other things being equal, the greater the remuneration." With equal certainty it may be asserted that in agriculture, or in one of its departments, like horticulture, the profits rise with the increase of skill and knowledge necessary to apply. Ample practical illustrations of this fact might be cited. For these refined products of horticultural skill, I claim the highest degree of profit to be obtained in the field of agriculture.

I may again assert, without fear of contradiction, that that department of agriculture which calls for the highest intelligence, will be rewarded with the highest type of satisfaction. Certainly the highest type of pleasure is of mental birth, rather than of physical or animal origin. Therefore, not only that department of agriculture, but that business that calls for the highest intellectual activity and force, is rewarded with the greatest pleasure. Believing that present investigations are laying the foundations of the art and science of agriculture so broad and deep that the future ideal farmer will be required to employ talents of so high and varied an order, in the most inviting field, the field of nature, I can but believe that farming, with horticulture its most enchanting field, is destined to become the royal industry by general consent.

Returning again to the question of quality in plants, I freely grant that there is less to encourage special effort in this field of practical horticulture, than in more densely populated and wealthy sections farther east, yet a demand will certainly follow a supply. It is in your power to educate the public taste to the standard you may achieve. That this is a profitable field for horticultural effort to enter, the successful efforts of practical horticulturists by selection, hybridization, pruning, thinning, etc., abundantly prove. It is only the relation of the food of the plant to its quality that I propose to discuss.

RELATION OF SOIL COMPOSITION TO QUALITY OF PLANT.

That quality is a flexible factor of a plant, and yields to changed conditions, to environment. horticulturists are aware, and make use of this fact in practice. Few, however, have attempted to modify the quality through the food of the plant. That quality can be thus modified does not admit of a doubt. Nor is it a costly factor where a soil needs feeding at all, for we may as well, and better, consult the real needs of the plant as to ignore them. Darwin, in discussing the "Direct and definite action of the external conditions of life" on plant-growth, asserts that "All floriculturists are unanimous that certain varieties are effected by the very slight natural differences of the compost in which they are grown, and by the natural soil of the district." He gives illustrations of this truth. These illustrations are, however, so intimately connected with climatic conditions as to afford doubtful proof of the relation of soil to a changed chemistry in the development of the plant. Universal experience of farmers and horticulturists affirms that the external appearance and quality in plants, as detected by taste, follows very closely the character and condition of the soil upon which they are grown. But how far these differences are dependent upon mere physical condition is not made as clear as desirable. Water holding capacity, compactness of subsoil, and other physical conditions that are in part independent of chemical composition, certainly modify the character of the crop. The physical condition of the soil modifies the vigor of the plant, and through this modification affects by a diseased, although unseen, condition the quality of plant or fruit. The conclusions need no evidence to demonstrate their correctness, for popular experience has unmistakably noted the influence on quality of grass, potatoes, grapes and other plants and fruits, of drainage and deep tillage. While a wide range of observation with the beet and cane for sugar,

grapes for consumption and wine, and the small fruits for flavor, leaves no doubt of the radical modification of both stem and fruit by the character of the chemistry of the soil, yet, the distinct part the soil plays in these changes is so uncertain, for reasons given, and for lack of critical enquiries, that I will omit a review of the question. I am the more ready to do so in order to institute enquiries as to the relation of added plant food to quality of plant, for the latter agency we can, if effective, utilize; we can institute an artificial supply of plant food in the soil that shall in practice become, in a large measure, equivalent to a change in the chemistry of the soil. Also, if we observe a change in the chemistry of the plant under varying methods of fertilization, we virtually demonstrate the influence of the chemistry of the soil on the chemistry of the plant.

RELATION OF APPLIED PLANT NUTRIENTS TO CHARACTER OF PLANT.

Darwin's quotation, already given, is an evidence, in a popular way, of the influence of manures on plants. This evidence is from the most critical observers, florists. These outward changes, visible to the eye, touch not only vigor but color. In the use of various combinations of chemical elements for plant growth, I have again and again noted the influence of food on the color of plant; and not only on the color of plant but on the character of stem and leaf. It is a common observation that green yard manure produces a watery unpalatable potato, over luxuriance of wine in grape, and kindred changes in other plants. Highly rank manures, or those rich in nitrogen, have the just reputation of producing great luxuriance of foliage with degraded flavor. Sir John B. Dows tells us that he can grow a mangel so rank and succulent, that it becomes worthless as food. English farmers assure us that nitrate of soda, furnishing nitrogen, gives a more succulent growth than other fertilizers, the crop weighing and looking finely while green, but of light weight when dry. Eastern farmers find that grass land receiving the washings of yards grows a grass rank and strong, and very much out of favor with the steer. We observe something of this in the uneaten grass around the droppings of cattle in pastures.

Recurring to personal experience in experiment work, I find by my notes that I have grown all grades of potatoes on a clay soil, from the poorest, with fresh yard manure; more rough but better in quality, with ashes; deep green stem and leaf, of rank developement but no increase of tubers, with sul. of ammonia; watery potatoes with muriate of potash; better and more starchy, or as is commonly

termed more mealy, with sulphate of potash; and the very best grade with sulphate of potash and phos. acid. This soil was of that character which under ordinary conditions returns potatoes of very poor quality. Following a clover stubble, that loosened the soil deeply in its compact layer near the surface, with potatoes fed by sulphate of potash and phos. acid gave me potatoes that a sandy loam farmer might envy. For years I found that potash salts gave stiffness to my corn fodder. From experimental sets of fertilizers put out by me for the farmers, whose Agricultural College Farm I then had charge of, the same facts were reported; that the fodder stood up better where the potash salts were used.

In several years of trials of manures plowed under, on several sections, each receiving weighed manure, against equal amounts of manure applied to surface of ground, I found that the method of applying manure affected the ratio of corn to stalk, or oats to straw. Surface applied gave 134 pounds fodder to 100 pounds of corn; plowed under gave 159 pounds fodder to 100 pounds of corn. Fermented versus unfermented manure gave similar results: fermented, 106 pounds fodder to 100 pounds of corn; unfermented, 70 pounds fodder to 100 pounds of corn.

The ratio of stem to fruit or seed with all crops is materially modified by the plant food used. Thus, on the Missouri College Farm, the past season, ground fertilized with good manure gave 88 pounds of fodder to 1 bushel of corn; with mineral fertilizers and 200 pounds sulphate of ammonia, the ratio was as 1 bushel corn to 105 pounds of fodder; with minerals and 100 pounds sulphate of ammonia, as to 100 pounds when mineral fertilizers alone were used, I got 1 bushel corn for 85 pounds fodder; with other fertilizers, still less fodder per bushel of corn was received. Such facts have been constant in my experience and in the experience of all others, who have given attention to the matter. I need not dwell on facts confirming the visible effects of the food of a plant on its outward appearance. The evidence is found in every department of plant growth. Even the dude at his cigar elevates his refined nose in contemptuous disgust at a cigar whose ash is not of that white character that comes from a plenty of magnesia in the soil, placed there either by nature or art.

While the facts given lead to my purpose, more definite and convincing evidence will serve better that purpose. I will give an illustrative instance of a general truth. From "How Crops Grow" we learn that in Wolff's trials the proportion of ash of crop varied

with each mineral used in fertilizing the soil, upon which it was grown; potash varying from 21.6 per cent. of the entire ash to 40 per cent.

Arndt found that vigorous plants contained 15 per cent. more alkalies and 15 per cent. less of silica than non-vigorous plants. The relation of these facts to our industry will appear further on. Armsby's "Manual of Cattle Feeding" relates a test for proportion of food nutrients between section of field in ordinary fertility and one highly manured:

	Protein, Per cent.	Crude Fibre, Per cent.	Fat, Per Cent.	Nitrous free extract, Per cent.	Ash, Per cent.
Unmanured..	11.	22.5	4.2	56.3	6.0
Manured.....	20.3	26.6	4.8	41.3	7.0

The difference noted is radical, and affects the digestibility and even palatableness of the food, as well as nutritive value, changing also the nutritive ratio and the appropriateness of the food to an animal of a given age.

The proportion of sugar, in sugar bearing plants, responds to soil and its fertilization. The country has already learned, in the brief history of the sorghum sugar industry, that the lighter class of soils, known as sandy loams, give the highest proportion of sugar. It is said that it not only effects the proportion of sucrose, but the proportion present that is chrystilizable, thus working a deep physiological change in the plant. Rank and nitrogenous manures are charged with the same effect. Both soil and manures affect the color of the syrup. With the sugar beet Laws and Gilbert found that, with mineral manures, average of 15 trials, the dry substance of beet contained 15 per cent. of nitrogen; with rape cake as a fertilizer 1.91 per cent. of nitrogen was found; with salts of ammonia 2.86 per cent. of nitrogen was found. The practical experience of the world is very rich in regard to the relation of manure to sugar product, and emphatically testifies to the direct effect of manure of various sorts upon the per centage of sugar secured from the sugar beet. The following is from Prof. Gossman's lecture on the sugar beet. Analyses are his own:

KIND OF FERTILIZER.	Per centage of cane sugar found in juice of roots raised from the following seeds:		
	Freeport, Illinois.	Electoral College Farm.	Valentine's College Farm.
Fresh horse manure.....	11.96	9.42	7.80
Blood guano, without potash	10.99	10.10	10.20
Blood guano, with potash.....	12.55	13.24	10.50
Kaniet and super phosphate.....	13.15	12.16	10.50
Sulphate of potassa	14.52	14.32	12.78
No manure, second year after stable manure.....	13.19	12.78	12.19

In the horticultural field we have less of specific facts than we desire to prove the immediate relation of fertilization to quality in product, hence the facts related have been given to create a probability that an intimate relation exists between the palatableness and quality of edible horticultural products and the food we give to the soil in use, and also the relation of manuring to the vigor of plant.

The masters in horticultural art and science have taught us that wild fruits are greatly improved by mere cultivation without applying the breeders' art. But they have not defined close enough the relation of fertilization to product. Indeed that question is not as yet solved, nor will it be for a long time yet. Inquiry in this field, is doubtless more required than in any other department of horticulture, particularly in the relation of plant food to vigor of plant or to its health. involving the various diseases that horticultural plants are "heir to."

The value of the net acreage product of the fruits of horticultural labor is in the better markets of the country, more dependent upon quality than upon quantity of product. The more valuable products of horticulture are used and paid for, as luxuries; hence it is a legitimate result that these products are gauged by their edibleness and taste. I have in mind a gentleman who has made a promising success of grapes, peaches and pears for quality, as a central aim. Gilt edged grapes will find a market as well as gilt edged butter. The latter commands often \$1 per pound, while the baser sorts pass for plebian uses in the culinary department for three nickles a pound. The gentleman alluded to sells grapes for 25

cents a pound, while, in the same market, one of the large markets of the country, poorer lots sell for from six to ten cents. I wouldn't have you infer that his success reached to the root of the problem, as fertilization does. His main methods are those known to the skillful. I now plead for an advance of standard beyond mere external appearance.

EXPERIMENTS WITH FRUITS.

While a vast amount of chemical work has been performed in the agricultural field, little has been done for horticulture. Prof. Goessman, of the Massachusetts Agricultural College, began a few years ago, in 1874, a series of investigations that have opened up a new field of enquiry of the utmost importance to horticulture. In two phrases of his enquiries are we now interested. He took the Concord grape vine and its wild parent (*vitis Labrusca*,) a purple grape. He set three rows of six each of the former and the same of the latter, on adjoining plats, upon ground never but once fertilized, three years before, with wood ashes. The following is the result:

ANALYSIS OF ASH OF GRAPES.

	Unfertilized Wild Purple Grape of original locality, ash constituents.	Fertilized Wild Purple Grape in vineyard, ash constituents.
Potassium oxide.....	50.93	62.65
Sodium oxide.....	.15	.85
Calcium oxide.....	22.23	14.24
Magnesium oxide....	5.69	3.92
Fenic oxide.....	.79	.54
Phosphoric acid....	17.40	13.08
Insoluble matter.....	2.91	4.62
	100.00	100.00
Sugar in juice.....	.0822	.1367
	Unfertilized Concord.	Fertilized Concord.
Potassium oxide....	57.15	64.65
Sodium oxide.....	4.71	1.42
Calcium oxide.....	11.30	9.13
Magnesium oxid....	3.10	3.63
Fenic oxide.....	.40	.50
Phosphoric acid....	12.47	14.87
Insoluble matter....	11.41	5.80
	100.00	100.00
Sugar in juice.....	.1389	.1543

Juice of berries of wild grape contained 9.84 per cent. of free acids; of fertilized 11.49. Fertilization of wild grape had carried sugar from 8.22 per cent. up to 13.67, or just about the same as the unfertilized Concord. It had most radically cut down the free acids and changed the proportion of the minerals, sending the potassium

oxide, or potash, up heavy and soda a little, and carrying the other materials down. Of potash, in its relation to the fruit tree, we will speak further on.

I have already noted, or will affirm if not, that its use improved the quality of my potatoes. It should be borne in mind that the kind of soil must determine the sort of fertilizer needed. Some soils by nature are such as to give the very best grapes. None know this fact better than wine-makers. The market price of wines and of wine lands give the best evidence of this. Prof. Goessman briefly notes that the fertilized vines, on the whole, are more vigorous, the leaves retaining their vitality longer in the Autumn. "They escaped repeatedly" he says, "a serious attack of mildew when the remainder of the vineyard suffered more or less from it." The fertilizers used were, per acre, 450 lbs. dissolved bone black, and 180 lbs. potash nitre. We add the result of his

EXPERIMENT WITH STRAWBERRIES.

	Wild Strawberry Fruit.	Wild Fruit.
Potassium oxide.....	20.06	49.44
Sodium oxide.....	29.79	3.23
Calcium oxide.....	14.88	13.47
Magnesium oxide ...	trace	8.12
Fenic oxide.....	6.07	1.74
Phosphoric acid.....	14.47	18.50
Silicic acid.....	12.63	5.66

In further trials, Prof. Goessman used sets of four fertilizers on as many plats, and included in his trial a fifth plat unfertilized. The results were as already noted. Each set of fertilizers contained potash. You will remember that in his beet trials it was the potash salts that gave the highest percentage of sugar. I do not mean to say that sugar is the standard of quality, nor that free acids can be relied upon in the grape to set our standard of quality. I know that those subtle qualities that go to make up what we term quality as related to taste are beyond the reach of the chemist's art, yet these changes are all in the direction of improvement, and demonstrate that quality is ours to modify by the dining table we spread for the roots. Quality we know is connected with health; and health and vigor are synonymous. Are proper food and good health synonymous too. They are in animal life.

RELATION OF FOOD TO VIGOR OF PLANT.

Goessman observed that his fertilized vines were less affected with mildew than the nonfertilized vines. He was led to investigate the relation of the food of the plant to its health with the peach tree,

by some suggestions made by German investigators, who in 1871, made use of certain chemical fertilizers for rye and buckwheat. Those investigators observed that "The sulphate of potassa had caused first a premature yellow color of the entire plant, which terminated with its gradual failing, whilst the chloride of potassium had caused a vigorous growth, a rich dark green foliage, and a successful production of grain. An examination of the plant had shown an excessive accumulation of starch in the cellular tissues, indicating thereby a retention of that constituent, while but little chlorophyl was noticed. By some cause or other, the osmotic action of the cellular tissue had been apparently changed."

Under the head of diseases of plants, Professor Bessey names as second cause, want of sufficient nourishment.

Dr. Geo. B. Wood, before the American Philosophical Society of Philadelphia, from experience, showed that the use of ashes (for potash) gave more of vigor and better health to his trees. His statements are interesting in view of the developments of Dr. Goessman, and after him of his former pupil, Penhallow, at Mr. Valentine's private experiment station. Professor Gressman reasoned that plants like animals, might suffer from improper nourishment, and in application of this view, and from study of the results of the peach yellows on the tree, concluded that this disease furnished an illustration of this conclusion. He at once, with the co-operation of Professors Maynard and Penhallow, began a practical test of the thought. The trees affected were set in 1870, on a knoll of light land. Trees planted on lower, richer ground, were unaffected. The land received ordinary treatment until 1878, when Prof. Maynard, who is an authority, pronounced them affected with the yellows. Eight diseased trees were fertilized, after cutting back the diseased wood to good sound wood. They soon regained their vigor. The fertilizer used, was common super phosphate, and 3 to 4 pounds chloride of potassium per tree. An analyses of the fruit and branches showed as follows:

	Diseased Crawford.		Healthy Restored	
	Fruit.	Branches.	Fruit.	Branches.
Fenic oxide.....	1.17	1.44	.58	.52
Calcium oxide.....	4.68	64.23	2.64	54.52
Magnesium oxide.....	5.48	10.28	6.29	7.58
Phosphoric acid.....	18.07	8.37	16.03	11.37
Potassium oxide.....	71.30	15.68	74.46	26.01

A microscopical examination was made by Professor Penhallow, resulting in showing:

1. Healthy wood shows comparatively little stored starch, but fungus growth is present in the outer layer of bark.
2. Diseased wood shows an abnormally small development of cells and an invariable presence of large quantities of starch; also an abundance of stored starch.
3. Diseased leaves show the presence of fungus growth, discoloration of cells filled with starch.
4. The fungus appears first on the trunk or branches, and thence enters the woody structure when the conditions are favorable.
5. There is little or no difference between the tissues and cell contents before and after the leaves fall.
6. While fungus is abundant on all diseased trees, it is also to be found on all trees which, once diseased, had been restored to conditions of vigorous life.

Professor Penhallow renewed the work in 1882, began by Professor Goessman and completed with his (Penhallow's) assistance as microscopist. This work was continued by him under the patronage of Dawson Valentine, a gentleman who is generously laying the foundations of a work that promises to be of great value to the American Farmer. The work is too full to review, but is of such character as to lead Prof. Penhallow to declare: "In conclusion, we may add that the arguments, as presented, seem to justify the belief that a correct diagnosis and remedy have been developed." An argument upon a question of fact in nature has been so often fallacious, that I think we must trust to the future to demonstrate what now seems highly probable. Prof. Penhallow, still had the aid of Prof. Goesman's continued success with his practical test and his own microscopical work confirmatory of original conclusion. It seems to be placed as a fairly reasonable conclusion, a fact, that in peach yellows there is an accumulation of starch and crystals of calcium oxalate and an imperfect formation of chlorophyll, so essential to healthy development of a plant; also a deficiency of potash is noted. The cells, too, are dwarfed and compact. His description of a healthy tree is for September collection of year old wood. Starch present in occasional pith cells; all of the health and rays filled with starch; starch wanting in the cortical region or present only in a few scattering grains. Wood restored by fertilization showed no practical difference. Diseased wood collected in September, or at same date as sound wood and of one year's growth, gave pith empty and sheath, rays, and a few wood cells, as well as half the liber and all the outer bark densely filled with starch. Structure of bark abnormal, and crystals abundant. The wood

presents remarkable density of structure and diminution of the size of cells.

We cannot follow him in his pathological descriptions of the results of prolonged investigations. In brief, he concludes that the disease is curable by fertilization; fertilizer recommend, kiserite, 25 pounds, muriate of potash, 100 to 150 pounds, dissolved bone black, 450 pounds.

The investigations with peach yellows establish a probability, indicated by Prof. Goesman, that many troublesome diseases that afflict the horticulturist may be traced to improper nourishment. Let us not accept the suggestion as a fact, but by proper steps establish or disprove this pleasing probability, Analogy speaks strongly in its favor. In the animal kingdom it has frequently been shown that an abundance of one sided food is not able to maintain animal existence; that debility follows imperfect food, and that debility is an open door to disease. Even in the vegetable kingdom it is well shown that lack of vigor in plants subjects them to the easy inroads of frosts and disease. Again, lack of vigor is followed by degeneracy of fruit. A weak plant is the parent of poor fruit. An elevated standard of success, keeping parallel advance with the movements of the age, must seek higher achievements from the true horticultural standard of quality in proper nourishment of the plant. Then, how to fertilize for our various fruits on a given soil, or on any soil, is not a question to be at present answered. Certain it is that no universal answer can be given, for all soils and crops, in one general formula. It is one of those complex problems whose solution lies before us. It is enough now to direct attention to the necessity of its solution. It will not come far in advance of a call for it.

The chemistry of the ash of a tree, of the soil, and particularly of the fruit, leads us to expect, on a soil originally not over rich in potash, that is available potash, a deficiency of this material, potash. The ash of our fruits giving large annual crops consist of from about 40 per cent. of potash in the apple to 60 per cent. in the plum. Judging by the limited facts at command, we are led to expect, as with Goesman, potash to be frequently wanting.

This paper is but a hasty resume of the subject to which it is devoted, and expected to be only suggestive. I feel that I am liberal with the charms of other occupations and other departments of the most royal of industries, agriculture, when I affirm that few fields.

of labor offer more interesting problems, more solid employment, or more substantial success. It was an luxuriant garden in which Adam was put and commanded to "Till and to keep it." This he failed to do. Horticulture is defined by Webster as "The cultivation of the garden." If to anyone we are to look to restore our Eden fatness of soil and flavor of fruit, it must be to the horticulturists. Many secrets have we to wrest from nature before the typical Eden blooms again, but with it, will stand our occupation, first in culture of the physical, the social, and the intellectual man.

Next followed a paper:

FORESTRY FOR EVERRBODY.

BY F. P. BAKER, U. S. COMMISSIONER OF FORESTRY, TOPEKA, KANSAS.

Since his appointment in the Forestry Bureau of the Agricultural Department of Forestry, your speaker has been the subject of multiform comment, for the most part good natured, on the seeming impropriety of the appointment of a mere man of business, with numerous other cares, to a position popularly supposed to require special scientific knowledge and training, nearly or quite equal to that of King Solomon, who is said to have known everything, from the cedars of Lebanon to the "hyssop that groweth on the wall." The subject of all this criticism has certainly no desire to reply here or now, or anywhere or at any time to all this "nagging!" much less to undertake the quite unnecessary task of defending the position that, in most governmental employments, a fair share of common sense and a sincere desire to perform the duties assigned is usually sufficient, without a preparatory course, embracing years in schools and universities, years devoted for the most part to the examination of speculations and theories.

But at least one purpose has been subserved, and that has been the establishment of the conviction, in at least one mind, that forestry is a subject of interest to every citizen in this country, and a subject quite within the grasp of the ordinary intellect, and that every man may do something in the way of forwarding the great work.

What is Forestry? The dictionary says it is the "art of farming or cultivating forests;" that is, the art of cultivating trees growing naturally in considerable bodies, but it has come to signify the art of farming and cultivating forest trees anywhere, as distinguished from the cultivation of fruit trees, or horticulture. Is there anything particularly occult or mysterious in this art? Does its pur-

suit require years of labor over books, or journeyings in foreign lands or an intimate acquaintance with all that botanists have written, from Linneus to Gray? I think not. A Maine or Michigan lumberman strikes his ax into a big tree and says it is white pine, and he conveys his idea quite as well as if he called it the *pinus strobus*, and when it comes to actual knowledge of the tree, its favorite location, habits of growth, and so on, the lumberman has usually the advantage of any mere book taught scientist. A man may know a great deal about the white oak without ever having heard that it is *quercus alba* of the books. So it is with the whole subject of Forestry. It is not like mineralogy; a tree does not require to be assayed to ascertain whether it is a tree or not, or whether it is one of value or not. Trees are ever present facts of nature. They grow wherever man lives, and human life is scarcely capable of preservation without them. Hence, their habits and requirements are matters of easy comprehension, as they are of daily observation. Looking over a collection of ores a non-scientist or non-expert might be troubled to tell gold from silver or silver from copper, but I apprehend there are very few men who do not know an oak from an elm, or a beech from a maple. Hence, it seems at least possible that any man of ordinary intelligence in other matters can take an intelligent and profitable interest in trees. Forestry, in its simplest definition, is the art of caring for and cultivating forest trees; hence I argue that any man with ordinary reasoning faculties and a taste for the cultivation of trees may become in some sense a forester.

Forestry, too, is a subject that concerns everybody. Such an immense interest as the farming and cultivation of the great forest area of this country, for the most part private property, cannot be committed to the exclusive care of a small corps of "professors," no matter how extended or toilsome have been their researches or how vast or profound, how mountain high or ocean deep their accumulation of knowledge. It is a subject to interest every American citizen, and in its progress the art of Forestry needs the efforts of every citizen, especially of every landholder or cultivator of the soil.

Every man should enter the field of investigation or experiment. A tree growing on a city lot is not a forest, certainly, but it is a tree for all that and it grows as other trees do. A man by watching that single tree from year to year may lay up in his mind all that a tree can tell him or tell any man. He may learn from his tree what he never could or would learn from any book. I would urge then every man to become a tree grower, be it on ever so small

a scale or a large one. Every man who plants a tree is a commissioner of Forestry.

Lest I should be considered as undervaluing the labors of scientists, or the tried and tested discoveries of science, I would say that the tree grower will find what may be called the literature of forestry, where it does not turn into mere speculation or the burdensome use of scientific and technical terms, extremely interesting and valuable. He will find the works of such laborers as Prof. Hough and the late Dr. Warder, of especial value. Dr. Warder, whose death every man in this country who loves trees, regarded as a personal loss, never wrote a line unintelligible to the average reader. He made the knowledge of tree growth popular, he belived in "Forestry for Everybody."

Any course, any labor in which men are engaged, is helped by mutual counsel; by what may be called the barter of accumulated knowledge. Hence there should be an increase, rather than a decrease, of this exchange. The "layman" should not always wait for the learned doctor of forestry to speak, he should send to the newspapers, and the agricultural journals and other means of communication with the public, his inquiries, if he needs instruction; the results of his observation and experiment. The Department of Forestry opens a field, through its circulars, asking for information, and it is to be hoped that every citizen will qualify himself to answer the questions intelligently, and not reply to each interrogatory, as did one of my own valued correspondents, with the solitary word, "Nun," adding insult to injury by spelling it "n-u-n." It is certainly demonstratable that every man may not only be a tree grower himself, but a contributor to the great and growing store of collected and printed information on the subject of forestry.

Again, every American citizen and voter should consider forestry a matter of personal interest and concern to him, because, under our form of government, any citizen may become a lawmaker on the subject, and, even if he is not called upon to make laws himself, he has a voice in saying who shall make them, and the time is approaching when the cultivation and preservation of forests on the public domain is to become a subject of legislation. It is a singular fact that in the great mass of legislation by Congress, while embracing thousands of petty matters, there is devoted to this great interest of forestry (beyond a few crude provisions designed to prevent the cutting of government timber) but one law, the Timber Culture Act, and this law, after a few years of trial, it is gravely proposed to repeal. I believe if forestry were made a matter of interest among

the people, that this move might be checked, and instead of the repeal of the act, we should see it not only retained on the statute book, but enlarged and strengthened, and, what is more, enforced.

Every country in Europe does something for the growth and preservation of its native forests, and besides does something toward the encouragement of tree planting, especially along public highways. But in this country it is proposed to abandon the first effort in that direction, because men here and there evade the provisions of the law, and swear to false statements, just as they do under every law, and every section of every law designed to convey the title of government land to the individual. Such action as this is the result of want of proper knowledge and appreciation on the part of the body of the people of the value of forestry, and this ignorance evidently extends to some of the departments of the government. Laws, it should be understood, are not made as experiments; they are made, or should be, to be executed. There is no condition of the Timber Act that cannot be complied with on the part of the settler; and there is no provision that cannot be enforced by the officers of the government. That is the object of maintaining salaried officers, and the repeal of the Timber Act would be a confession on the part of the government that its power is a negation, and its officers worthless. If the repeal of the act were recommended for the reason that the soil or climate of some parts, or the present homestead area, rendered tree culture impossible, the case would be different. It would then be in order to restrict the operations of the act to regions like Minnesota, Kansas and Nebraska, where it is just as certain that trees will grow as it is that grass will grow. But to ask the repeal of the act because the government of the United States confesses itself unable to punish fraud, and its officers are too lazy or careless to carry out their instructions, is simply pitiful.

I have now gone over the ground I had originally marked out, and indicated my position that forestry is a matter of general interest; but there is nothing in the art which is beyond the grasp of the average intellect, and that every man may do something in the way of forwarding the work of spreading the practice and theory of forestry. It remains to speak of some of the results which would follow the adoption of these views and their practical realization.

While man has been on the earth a long time, he is still learning concerning its value to him; its resources, or rather he is learning and forgetting. One generation, or series of generations, digs irrigating canals and plants trees along their borders. In a succeeding century the canals are allowed to fill up, and the land becomes a

desert; then comes a happier day and the canals are reopened and fertility returns. Our fathers found a great portion of the present limits of the United States covered with magnificent forest, and painfully cut the trees down, and in many instances burned them up. Now comes the generation of restoration, and we are awakening to the necessity of saving what our fathers left, and restoring the shade and shelter and moisture to the areas which they denuded, and the object of this paper is to insist that the growth of forest trees should be made as prominent in the list of human pursuits as the raising of fruit trees or of grain.

Suppose the necessity and practicability and ease of this work could be everywhere understood, what would happen? Beginning with individual effort, every city lot partly occupied by a residence, would have its trees to beautify the premises and keep the sun of summer and the biting blasts of winter from pouring in their fury upon the hitherto unsheltered house. In the country every farmhouse would stand in its grove, every stately country seat in its park, shadowed by great trees. Every farmer who possessed timber land would preserve it to be a source of wealth and comfort to those who should come after him.

Joining men together for mutual and united actions in cities, towns and villages, would be formed those "improvement associations" which have done so much good work where they are already in existence. Instead of every property holder acting separately, setting out his trees on all sorts of lines and angles and elevations, by concert of action the streets would be lined with long lines of trees, forming great alleys in summer of brightness and verdure; parks and squares and pleasure grounds would be maintained everywhere—not in their usual present forlorn and neglected condition, but neat, trim and agreeable to the eye. In the country, the farmers acting together or by direction of the road overseers, would line the country roads with trees, and surround with them every cross road church and school house. Farmers in a prairie country would set out their groves where their quarter sections joined, forming a large body of trees for mutual protection and support.

Corporations owning great tracts of land would encourage settlers on their lands to plant trees, using their money and influence to that end, and inaugurate the planting of such artificial forests as would literally throw into the shade all the experiments of the kind in Europe. With their enormous resources of money and influence they could ransack the earth for additions to our lists of trees and bring here other trees as valuable as the *ucalyptus*. The same dis-

play of wealth and energy that has been made in building our great continental lines of railway would work wonders.

Last of all, the Government, which represents all of us, which is intelligent as the people are intelligent, or ignorant as they are ignorant, and reflects, although not instantaneously, the popular will, would stretch out its fostering hand, its protecting arm. The tree robber would be repressed and the Government forester would protect the property rights of the Government and the interests of coming generations. Instead of confession that the Government of the United States could not outwit perjurers, and so must tear pages out of the statutes to relieve them of temptations, the timber claim fraud would be picked up as readily as the mail robber, and false swearing would be made dangerous as well as odious. The policy of employing special agents of the general land office, now successfully inaugurated, would be extended and made efficient; sleepy, inefficient or corrupt officers in Government land offices would be held to the same rigid accountability that now exists in the postoffice department; timber claims would be carefully inspected and their owners informed that the Government of the United States in parting with its own domain, almost without money and without price, yet insisted on the performance to the letter of the easy conditions in the way of improvements. A portion of the surplus now accumulating in the Treasury of the United States might well be employed in showing men that the national sovereignty means something, at any rate that it is strong enough to carry out the will of the people. As a consequence the bare and wind swept prairies would be transformed, hidden springs would come to light and the mist and rain would come where now is barrenness and desolation.

Such are the results which would follow the spread of the doctrine of this paper, that every man may, can, and should be, a forester, and that forestry is not the chosen vocation, an "art and mystery" practiced by a chosen few, who speak of trees in Latin as doctors write their prescriptions, and who band together to denounce everything not proceeding from themselves as "unscientific," but that forestry is the natural and proper business of everybody who has an interest in the soil of the earth.

I need not speak of the benefit of societies like this, composed of practical men, who have set out trees with their own hard hands, and placed the soft earth about their roots as a mother wraps a blanket about her child, labored patiently for years, until at last they sit down under the shade of their own orchards and eat of the fruit of their own trees. He who plants and rears one tree has a

sympathy for all the brotherhood of trees; the fruit tree planter is also the forest tree planter, and so gentlemen, I have been emboldened, even though myself destitute of that scientific vocabulary so much insisted on by the pedant, to submit to your kindly attention these suggestions on "forestry for everybody."

A paper was then read on

LOCAL ORGANIZATION.

BY C. W. MURTFELDT.

MR. PRESIDENT, LADIES AND GENTLEMEN: Years have passed since I had the honor and pleasure to meet with the Alton (Illinois) Horticultural Society, but the pleasant and profitable hours spent in that association in public session, and with the individual members socially, are still green in my memory and will never be effaced while life shall last and I am in possession of my natural faculties.

I know of no more useful and efficient organization of its kind, taking into consideration the ability, practical character and experience of its membership. This fact is patent to all who know the men, and is recognized, not only by the Illinois State Horticultural Society, but also by kindred organizations. President Marshall P. Wilder, a man not given to bestow unmerited praise, paid a high compliment to the Illinois Horticultural Society for its efficient labors and for the general intelligence and ability of its members, and then added, "But your brain and heart is located in the Alton Society," or words to that effect.

It makes me feel sad when I reflect that Dr. Hull and his estimable wife, Willard Flagg, Jonathan Huggins, Isaac Snedicker and others, younger than myself (with one possible exception), have been taken in the midst of their usefulness and passed to "that bourne whence no traveler returns." Still others have moved "to pastures new" and all these are not now identified with this or kindred associations.

Many of the members of the Alton Society were members of our State Association, paid their annual dues, attended the annual meetings, contributed not a little to the general interest and added value to the secretaries' subsequent reports. I remember particularly an essay on the peach, by Willard Flagg, which, like all his public efforts, was exhaustive. It was contributed at my own solicitation, and can be found in the Missouri Agricultural Report for 1870 or 1871.

I believe the Alton Society still lives and holds monthly meetings as usual, but since Prof. Barler's removal north, they are not reported for the St. Louis dailies, or at least not for those which come under my own eyes. The social part (which was interesting) of these meetings, I believe to be ignored, if not utterly abandoned, and "more's the pity!" because this particular feature furnished the cement; the reunions were most pleasant and tended to keep alive the zeal of each particular member in the cause in which all were engaged, as well as in each other. The pleasure was mutual, innocent and harmless in itself, giving opportunity for thought, for sympathy in each other, while the business transactions, with their object lessons, afforded a great chance for improvement of mind and greater efficiency in "the art that doth mend nature." The preparations going on at the place of meeting, days before the event, and the subsequent digestion of the mental pabulum and the practical application of the lessons taught, furnished matter for conversation for weeks afterwards, and thus amply repaid for money, time and trouble. The cost was indeed trifling in fact, but especially when compared with the benefits resulting therefrom, and also in consideration of the fact that the large membership made it necessary to visit certain families only once in three years, with one or two exceptions (which I could name), whose members insisted on at least one meeting annually, at their respective residences. Though differences of opinion on certain points were inevitable, yet I never heard of a meeting of this Association that was marred by harsh words or discord.

And just here, Mr. President, allow me one reflection, namely: How trivial and insignificant in comparison with such meetings are fashionable calls and parties, made by people and for people who have little in common, who have no interest in, or sympathy with each other, whose conversations are flat, stale and unprofitable, consisting of gossip and platitudes, which leave no pleasurable impressions upon your mind or heart, and excite no emotions or aspirations for a higher plane of usefulness and more efficiency in your life-work, which are in fact evanescent as—soap bubbles!

Allow me now to introduce the salient points of the routine business of the Association, which I am holding up as a model. I do this in the hope that new local societies may spring up all over our state. After the society is called to order by the presiding officers of the day, the minutes of the last session are read by the secretary, amended or corrected, if necessary, and approved. (Generally these are printed by a local paper, and thus reach many families not

members, and pasted in the printed form in a scrap-book, with amendments, if any noted, on the same page.) Next in order are reports of standing committees, appointed for the current year. Then comes the "essay" by a member previously appointed, and upon a topic selected either by the essayist or the society. This is followed by brief discussions of the papers. After this, luncheon is served. The Giver of all good is reverently remembered. Luncheon is plain, substantial and abundant. Conversation, wit, repartee, furnish the condiments and aid digestion. Some little time is spent in a walk about the grounds, and then there is a brief afternoon session. The flowers and fruits, in their season, are exhibited and examined by proper committees, who report at this time. Sometimes a brief paper is offered by an outsider, and then comes the finale of the good-byes and farewells.

Among the topics discussed, and their practical character, I have found the following: New varieties of flowers or fruits; the best varieties; mode of propagation, cultivation and marketing; the cheapest and best kind of basket and crates for shipping of fruits; transportation by wagon, boat or railway; the adaptation of fruits for domestic or commercial purposes; ornamental planting of flowers, shrubs and trees, and the adornment of home, etc.

The Alton Horticultural Society has been called a model of its kind, and has been selected for that reason. It is decidedly the most efficient which has ever come under my observation. Were I living in Douglass Co., Kansas, I might find an equal, but no superior. The Alton Society is particularly strong in men of culture, taste, experience and practical characteristics; and because the title of my essay is "Local Organization," it becomes necessary that in my argument I should show something of practical value of such efforts on a profitable industry, as well as for the growth of the inner man, as a social and moral being who recognizes his duty and responsibility, not only to those immediately connected with him by the ties of blood, but to the society in which he moves, and to the state in which he claims citizenship.

And now, Mr. President, allow me to state that I should ignore the truth and do violence to my sincere convictions, were I to omit the fact that it is a moral impossibility to carry on local horticultural organizations without the aid of the ladies. What home would be without a mother, wife or daughter, such would be a local horticultural society or a farmers' club without the ladies. I need but point you to a mining camp in new diggings, or to any community where women are few and lightly esteemed, or to a "bachelor's hall,"

to show man, devoid of all that is manly, generous, elevating and sympathetic in his nature, and, *per contra*, in associating with himself the ladies, with their natural tact, taste, and willing hands, he loses much of his selfishness, and becomes what he should be, a devoted husband, a kind parent, and a respected citizen. God said it is not good for man to be alone; no, not even in Paradise; much less in Missouri, even if some parts are called God's country. Without them and their active, elevating and Christianizing influences, success is problematical; with them it is assured.

And now let us for a moment glance at the characteristics which are needed in the male members of a successful society. They should be men possessing good common sense; they should be studious, close observers and practical workers. A man of this character can, in a lifetime, learn much about his chosen life-work. Such a man will ever be ready to admit that "now we know in part" only, and one man at best can know but little. Yet if we can make the combined knowledge and experience of many men available, as would be the case in a local organization holding monthly meetings, and wherein every man and woman would contribute the best at his or her command, do you not see that much valuable information could be disseminated, not only by the local press, but also by the annual report of the State Association, to which it should form a contribution, because through her it would be preserved in a more enduring shape. If, then, local organizations were perfected in every county where possible, how long would it be before the horticultural possibilities of every section would be generally known. To aid in bringing this about is the object of this essay. Then, and not till then, will our state, so rich and varied in her climate, soil, location and natural advantages, bestowed upon her by a beneficent Creator, lay claim to the rank in the galaxy of this wonderful confederation of commonwealths, to which she is entitled from an agricultural and horticultural standpoint. But, Mr. President, before Missouri can do this, and assert her true position and greatness, there must be a greater diffusion of knowledge and a general clearing up of the mists which now hang over her political horizon like a pall. Please do not understand me as speaking of parties or as a partizan; I am not *most decidedly*. The masses of our farmers, some of whom have a name upon the roll of our legislators, have little or no appreciation of the work on which you are at present engaged, and for which you are convened at this time. And for that matter they equally ignore and are ignorant of the real value to the citizens of Missouri of an efficient State Board of Agriculture and

Horticulture. In this respect—and I speak with due consideration—we are 20 years behind our neighboring states on every side. Ohio, Indiana, Illinois, Iowa, Kansas and Nebraska, do not think it a waste of money (nor do the citizens of these great states argue that such institutions are created simply to provide place, title and salary for one or two officers) to organize and keep intact perpetually State Boards of Agriculture and Horticulture. On the contrary quite the reverse. They find that *it pays, and pays well*, in the diffusion of general knowledge and information which has a practical bearing upon the lifework of by far the greater majority of the people of these states, even though not a single immigrant were persuaded thereby to make his permanent home within their borders. The gathering and compiling of statistics, the monthly reports of growing crops, of fruits and cereals, of fibre plants and wool, of oil seeds, sorghum and tobacco, while also giving the number and condition of domestic animals, of dairy products, and other incidental information, are not only necessary to let every farmer and fruit-grower know the value of his products, but also, where he is most likely to find the best market for the same; and they are so many evidences “to all the world and the rest of mankind” that the inhabitants of these states are not drones or dead, but active, living men, pushing with all their might and main for the front rank of this wonderful and highly favored confederation of states.

Talk about the increase in taxes! Faugh! The few thousand dollars needed for printing and to pay the salaries of two secretaries and a statistician, and incidentals, do not amount to the price of a three-cent postage stamp for every male, or to the price of a single yard of half-inch-wide ribbon for every mature woman in the State. Is it economy or wisdom or statesmanship to thus cripple and shame a State so rich naturally as Missouri and make her take a back seat when she could lead? Pardon, if you please, my attempt to draw a pen picture which may possibly prove abortive. Look at the grand side-wheel, high-pressure steamer, with flags and pennant flying, with steam up and officers on deck, steady, strong hands, guided by a sound mind and an unclouded eye in the pilot house, holding her on her onward course and looking out for breakers, while “she walks the water like a thing of life;” and then look at this moss-covered and forlorn looking old stern-wheeler, with only half a complement of buckets on her wheel, with only a half set of men to work her, her engines wheezing as if she had the asthma; why, Mr. President, you have to take a view of an object on shore to determine whether she moves at all or not! This gives you but a faint contrast between

our neighboring States and (I quote) "Poor old Missouri!" With much greater pleasure would I write (could I do so truthfully) Grand old Missouri, so full of possibilities, unrivaled in her natural resources, her central location, her arteries of commerce and trade, her beautiful prairies, her rich woodlands and her magnificent rivers, her clear streams and her health-restoring springs. Let it never be said that she lacks either men, women or brains; that she is too poor or too indifferent and indolent to assert herself! Send men to make your laws who have an appreciation of what Missouri can be, and who have the force of character and the strong backbone to say that she shall yet occupy a front seat among the States of this great and glorious Mississippi Valley! "United we stand, divided we fall," so often and aptly quoted in reference to the States forming this Union, may very appropriately be quoted or applied to organizations which have a common or universal interest of or within a State. If this be true, then let every legitimate effort be made to impress upon the Governor and the legislators the absolute necessity that something must be done to wipe out the stain now upon our escutcheon, so that the citizens of Missouri need not blush whenever her name is mentioned and need not pocket the insult that she is "old foggy" and twenty years behind the times. Reason with them and show that the best interests of the entire commonwealth lie in agricultural and horticultural pursuits, and that commerce and manufacturers cannot and do not flourish and prosper but as corollary with or superstructures of a generally intelligent and prosperous condition of the agriculturist.

May God speed the day when every son of Missouri and every citizen, man, woman or child, shall be proud to acknowledge and be happy to say: "I hail from Missouri; God bless her!"

This report of Local Organization, it seems to me, should not pass without some farther notice.

Our worthy president need not have gone out of the State for a model of a local society, for at Kansas City there is one of the best societies in the western country, and one that has gained more honors in the way of making exhibits, perhaps, than any other society of its age in the United States. Some have excelled by uniting agriculture with it, but no society has succeeded so remarkably in the horticultural line alone. No meeting of this society has failed for the last *fourteen* years, and it has developed more good horticulturists

than usually falls to the lot of such a young society. It has taken as high as \$360 in one year, in premiums. Its meetings are held for six months at the houses of members and a general good time socially is had. A pic-nic dinner is one of the attractions and everyone enjoys it. Whatever is claimed for the Alton Society can be claimed for the Missouri Valley Horticultural Society, unless it be in prominent members, and it is not far behind in that, for we mark Col. G. S. Parks and Maj Z. S. Ragan as old stand-bys in this work. One thing is certain, that "Grand old Missouri" can boast of the best horticultural society in the West.

Next followed the

REPORT OF THE MEETING AT NEW ORLEANS, FEB., 1883.

BY L. A. GOODMAN.

The committee appointed by the Society at the last meeting, consisting of J. C. Evans, F. Holsinger, L. A. Goodman and W. G. Gano, to make an exhibit of fruits at New Orleans and attend the meeting of the Mississippi Valley Horticultural Society, offer the following:

We left Kansas City in time to meet the special train leaving St. Louis with delegates from all Northern States. Trains were delayed by the high water, and before reaching Cairo we ran through about ten miles of water. Reaching Cairo we were there delayed for the entire day on account of the water in the Ohio. The banks of the railroads held the water out of the city, by the continual work of many men watching them and shoveling dirt at every weak point. After crossing the Ohio no more trouble was found on the way to the South.

After crossing Kentucky and Tennessee we began to see trees and shrubs to which we were not accustomed, and you may be sure that, as horticulturists, we watched every change in the earth, in the air or sky. Down in Mississippi we found the Southern pitch pine, or long-leafed pine. Near the Ohio river we found the poplar in immense quantities. Farther south we saw the beech and birch in plenty. But of all the trees, we fell in love with the Southern magnolia. It is one of the most beautiful of all the trees in the United States, and it is a pity that it is not hardy enough for us; although by some it is claimed to be so if protected for a few years while young.

Going farther we found something in the tops of the trees, and began to wonder if they were crows, but they soon became too plenty and then we found it was the mistletoe. Then ensued a strife to get a piece of it, but it did not avail until we reached New Orleans. Questions then began to arise as to the varieties, if there were any; some claiming many varieties, others that there was only one. On return home we found as many varieties in the botany as of the oak, elm or of trees in general.

We next reached the palms and the cane brakes, and then the oaks, with their dress of mourning; the long moss hanging from their boughs. Next the live oaks were admired.

Passing on through a long series of swamps we reached New Orleans and were all sent to the St. James Hotel; and a crowd we were, to be sure.

That afternoon we arranged our fruits, and a fine show it was. We had eighty-five varieties of as fine specimens as were ever seen. The people of the South began to open their eyes at the sight of our fruits. Many a compliment did our State receive for its splendid show of apples, and we were kept busy answering questions.

The meeting was one of the best it was ever our good fortune to attend, and the result of it all terminated in one of the most valuable reports ever sent out by any society. This report can yet be obtained by sending to the Secretary, W. H. Ragan, the membership fee of \$2.00. His address is Lafayette, Ind. The benefits derived from that meeting I cannot stop here to particularize but in that report you get it all. Enough it is to say, that with the best horticulturists in twenty States along the Mississippi Valley you could expect nothing else than a good meeting.

A few words as to the country we saw: Many, very many, places along the railroad were in a very dilapidated condition. There did not seem to be the thrift and go ahead that we see all about us here. The land seemed much poorer, the people much poorer and the crops ditto. But this much we can be sure of, that we have in no way anything to be envious of or jealous of. They have a warmer climate, but that makes them lazy. They have an easy time, or rather they take an easy time. Of all the places we saw, or through which we passed, we saw nothing to make us wish to leave our homes, and we came home satisfied that here we had the best ground, best climate, best people and best workers of the country. What they need there, one of the Dutchmen of our party said, "Is one million Dutchmen to go down there and work."

A pleasant meeting, a profitable meeting, and a valuable meeting we had. In fact we were so much delighted with it that we invited them to hold the next meeting at Kansas City, pledging them the co-operation of the State Society and the Missouri Valley Society. The result is, that on January 22d—25th, they will meet at Kansas City, and it is the desire of the officers of the societies that we give them a warm welcome. I would recommend that the President call for volunteers who will promise to attend and that their names be taken as delegates. We should have a good strong delegation go up there. Reduced rates are given at the hotels (from \$1.00 to \$3.00 per day), as it is impossible to obtain entertainment for the Society. Let us urge you, therefore, to come up to the meeting, all who can possibly do so, and it will be a pleasant and profitable meeting.

COMMITTEES.

The following committees were announced:

On Fruit—Messrs. Bennett Hall, I. S. Haseltine and G. F. Espenlaub.

On New Fruits—J. C. Evans, J. B. Wild and Prof. J. W. Sanborn.

Adjourned to meet to-morrow at 9 A. M.

THURSDAY FORENOON.

Meeting called to order by the President, who opened the meeting with prayer.

The subject of orchards was taken up and the following papers were read:

"Orchards," W. G. Gano, Parkville, Mo.; also Chas Patterson, Kirksville, Mo.

"Ben Davis," J. A. Durkes, Weston, Mo.

"Profit of Orchards," W. A. Ragan, Clayton, Ind.

"Apples," Jas. A. Bayles, Lees Summit, Mo.; also Wm. McCray, Glassville, Mo.

Following these papers was a lively discussion, which ran over into the afternoon, and much information obtained.

CARE AND CULTIVATION OF ORCHARDS.

BY W. G. GANO, PARKVILLE, MO.

It is an old adage that one's practice is seldom any better than his theory.

Realizing some of this has caused me to hesitate somewhat about producing this paper, and to my neighbors, who are here, please don't amuse anybody by saying, "You just ought to see his orchard once!" One will never hit the mark if he does not aim towards it, and if I cannot offer any suggestions that will be of service to others, my own thoughts and expressions at this time may aid my practice hereafter.

Are our orchards as vigorous and healthy as we would desire, or as when we first planted them and as in their early years of cultivation? If any one is so favored he is one of the few, who through a train of circumstances, have been favored above the mass. We may assert, without successful contradiction, that a majority of our orchards are not what they should be, either in health, which means thriftiness, or in profit, which means fruit. What are their wants to restore them to those two essential conditions? To determine clearly this important question will call for knowledge that but few of the husbandmen of our land are in possession of. We of course have reference to botany and physiology, by which we may know the forces which act upon matter in the conception and formation of the tree, the relation that one member bears to the other, to make a perfect whole, and the wants of that whole to perpetuate life and profit. We need also to be well versed in agricultural chemistry, that we may the better understand the principle of assisting nature in restoring the wasted or absorbed elements of plant growth. I have many times wondered why it was that so many of our farmers have shown such marked hostility to our Agricultural College, instituted for the benefit of their sons; an institution combining both theory and practice in all of the vocations of a farmer's calling.

It is an old saying that "Soil counted good wheat land is fully adapted to the apple." This may be true in part and in part not true, for much depends on the substratum. One plant is an annual; the other a centenarian or more. The one feeds from the surface mostly; the other digs deep and with outstretched arms cries, "Give," and with its long branches stands exposed to a lingering slow death from many causes. Often there is too much water, or

hydrogen, its roots are poisoned and no longer perform their proper function in reaching for new substances on which to feed. With its channels thus impeded is it any wonder that it casts its fruit? that its leaves, the lungs of the tree, grow yellow, wither and fall? In all such cases, and they are numerous, there is but one remedy, and that is underdraining deep and efficient. Give those roots a chance to go where they please dry shod. It is a fact known to every scientific horticulturist and pomologist, that many and very many of our orchards are losing their pristine vigor and dwindling away from other causes than drowning, some by sheer neglect, others, by vile treatment, and a large proportion from want of proper food. When we go back and view the shrub in its native jungle, shaded from the parching suns of summer and the bleakness of an arctic winter, and compare that protection with what it gets in our latitude, after undergoing the transforming process from the native crab to what it now is, is it any wonder that its susceptibilities have been increased. Close observations and careful watching will be important factors in guiding the orchardist to action. The mysteries of plant growth; the knowledge of the combined forces that propel it, have been, I am sorry to say, a sealed book to a majority of the farmers of our land. They plant and sow regardless of surroundings. Harvest or no harvest it is the hand of Providence that has done it. If there is a truth on God's footstool that needs to be inscribed upon the door-posts of every tiller of the soil; proclaimed from the house tops the whole length and breadth of the land; it is the one that asserts the importance and necessity of skilled scientific labor in cultivation and care. The rules of trade, the law of supply and demand, our individual identity all demand of us thought, demand of us to produce more, produce better and to produce cheaper.

"Thou shalt not prune," is the royal law, "But, but," is the thought of some, "if a limb," etc., etc. Yes, yes, my dear sir, if a limb is dead cut it out, etc. Because the skillful surgeon removes a diseased limb, would you therefrom argue a regular pruning of feet and fingers, head and hands, eyes and ears, legs and limbs of the human subject. So with your trees. Fundamental principles require keen observation and a great deal of common sense to carry out, but which are all right. "Print them on a card and nail them up in your orchard," said one of our best horticulturist. We would say now, write them down in your minds, and don't you forget it. Yes, the apple is the product of civilization, and requires civilized treatment. It demands the best of care at our hands, if we expect to make it a source of profit. I would have those

who are raising apples know that the value of their crops depends on the gathering and shipping. I would have them know that apples bruised have lost much of their value. I would have them know that it is easier to gather a dollar's worth of apples than to raise a dollar's worth of wheat. I would have them know that apples can be kept till they mature; that farmers have facilities for wintering apples as well as stock.

The successful cultivation of fruit has a greater retinue of obstacles to surmount than that of any other department of labor that requires the cultivation of the soil. The possession of land in a good state of cultivation and the putting of it out in fruit trees is but the beginning of the cares, anxieties, labor and expense necessary to make the enterprise result in the most successful development.

The insect enemy to the fruit-grower is a very difficult obstacle he has to surmount. The migratory habits of the moths, and the dilatory habits of the fruit-grower generally towards their destruction, make it quite difficult for those that are anxious and willing to rid their orchards of these pests to accomplish very valuable results, as the moths are so ready to migrate from the neglected orchard of their neighbor. Nearly one-half of our fruit is more or less injured; much of it entirely unfit for use. With all the failings of the orchard, a little cultivation, care, mulching and fighting worms, as best we can, will usually reward the orchardist as well as capital invested in any other enterprise; that is if he has made proper selections of varieties that are adapted to his locality.

You must push your young trees as fast as you can for the first few years, for you must have a tree before you can expect fruit. You must have the tree so trained that every leaf shall have the best possible chance to get the full benefit of the light. You must have the soil of such a character that it will hold abundant moisture without holding water, and be rich in manure. You must have the roots near the surface, where they can have the full benefit of the gases of the atmosphere. You must keep the surface absolutely dark and as cool as possible.

Some people talk of growing crops in the orchard. I have never yet seen two good crops grown on the same land at the same time. If you give upland for an orchard don't rob the trees by trying to get a crop from them. They need cultivation, and something can be grown in the spaces but not enough to more than pay for the labor. As to pruning; twenty years ago the practice of going into the apple

orchard with axe, saw, and knife was already called the old practice, but it still survives, for all that.

To those who believe their orchards would be ruined did they not plow them every year, we would recommend cropping with peas, using liberally a good dressing of wood ashes if obtainable, not omitting the lye wash as often as once a year, and be sure to let the hogs do the harvesting. Continue this treatment a few years and you will find a new vigor in your trees and a brilliant complexion on your fruit, and in size and quality you will not be disappointed.

Another, and a very successful way of fertilizing an orchard, is, as soon as the trees become well established and begin to bear fruit, to seed down the land to clover and mulch the trees substantially, and not forgetting the dressing of ashes and lye wash, and not forgetting the hogs, let them have full access to the orchard, for we do think that hogs are more than one way beneficial to the orchard. Plow your clover under about every third year and let it seed back. We consider this the preferable way to treat the orchard. Indeed this method comes nearer to the native habit of the trees than any other. It gives no forced stimulation to the roots, by extra heat from a summer's sun, but keeps the soil moist and sufficiently cool at all times, and adds value as a protection against frost in winter. It makes a place for the straw stack and corn stocks that we burp up to be put out of the way, and our land will not wash as when cultivated, but will be made richer from year to year.

Again permit me to urge the necessity of being more thorough in our experiments. We are all too apt to form hasty conclusions. I am sometimes led to believe horticulturists can jump to a conclusion quicker, and with less solid reason than any other class of men. This is one of the reasons why there are so many infallible remedies for all the ills with which fruit and trees are affected, and sure death remedies to all our insect enemies forever being puffed, and forever failing. One experiment, however well it may be performed and however satisfactory it may be to the experimenter, under certain circumstances, with changed conditions must be expected to give changed results. In no human concerns is this more truly the case than in matters of horticulture. The science of horticulture can scarcely be said to have any fixed principles. It seems sometimes, when taking into view the great contrariety of opinion on almost all points within the domain of horticulture, that nothing is absolutely known as true; that nothing is fixed beyond dispute; nothing that we can point to and say, "This is Horticulture Gospel." True, there are a few maxims that stand undeniable, such as that a growing

plant is the result of planting a seed, that fruit succeeds bloom, that plant life must be fed, etc., but beyond this all is one wide sea of disputation. Of course we must not expect the time to ever come when we shall know it all; when there shall be nothing to learn in our whole calling; when our opinions shall coincide on all points and theory be reduced to fact. But it will tend toward such results if in our experiments and investigations we assume nothing, but prove all things, and hold fast that and that only which is proven good.

The following discussion was had on Mr. Gano's paper, with reference to the agricultural colleges, and the chair permitted the digression, as it was a matter of very great importance to us all.

Mr. Murtfeldt asked Prof. Sanborn what was the reason that there is so much opposition to the Agricultural College? The Professor answered he "Knew no satisfactory answer." The Chair said he knew and could give it, and being called for, he proceeded to give his views:

The question as to why there are so limited a number in attendance at the Agricultural College brings out a general expression of opinion as to the reason and criticism of the college curriculum is made.

Mr. Murtfeldt thought that the professors should make more prominent the fact that the profession of the husbandmen is one of the most desirable, if not the most desirable, for the average student, and that students should be taught to prepare themselves for the life of a farmer, fruit or stock grower with the same painstaking care, application and zeal that would be expected and essential in entering upon any other calling, and that students should be taught that husbandry afforded ample scope for all their intellectual power, and that the promised rewards of progressive methods were sure. Mr. Barry wanted to see an experimental orchard on every college farm. He thinks there is necessity for reform in the college in the direction indicated.

Mr. Hazeltine thinks the reason why the college turns out so few zealous, energetic, scientifically educated farmers is that the profession of husbandry does not receive from the public and the patrons of the college the moral support that it should. That the students are not sent there with the idea that they are to become progressive husbandmen, but that they are urged by their parents and friends to go into other callings, and then, possibly, after fail-

ure in "the learned professions" they could fall back on farming, for "anybody can run a farm."

Professor Sanborn gave some excellent reasons for the failure of agricultural colleges to accomplish what was expected of them from a practical professional standpoint, and urged the necessity of providing for the profession of husbandry instruction and experimental illustration adapted to the special needs of the calling. Literary men who are nothing but literary men, were not made out of the timber out of which to make professors for agricultural colleges. A medical college needs practical medical men for instructors, a law school practical lawyers and a school for engineering needs practical engineers. The student of agriculture should have for instructors and demonstrators men abreast of the times in practical agricultural methods, for there is not a broader or more fruitful field than is open to the agriculturist, horticulturist and stock grower.

The following letter and paper was read :

KIRKSVILLE, ADAIR Co., Mo., Dec. 10, 1883.

MR. L. A. GOOMAN—DEAR SIR: With this please find the paper promised; hope it will not be too late.

The crop of apples in this county was probably not more than one-third or one-half. Turner raspberries did rather better than usual with me, but have seldom turned out as well as Mammoth Cluster; the latter failed entirely, the first time in many years, after setting and promising at east half a crop. Of Greggs I have but few, and have never found them decidedly better than Cluster. Strawberries would probably not have paid well had I had more than one-tenth acre. Early Richmond cherries bore nearly a full crop. Apples were mostly sold to shippers at 60 cents, but I hear of one man getting \$1.00 for extra nice for family use.

Yours truly,

CHAS. PATTERSON.

MANAGEMENT OF APPLE TREES IN THE ORCHARD.

BY CHAS. PATTERSON, KIRKSVILLE, MO.

The subject assigned me was: "The Apple for Market, Family and all Purposes;" but as I have had more experience in growing trees and observing orchards than gathering fruit, so far, and as

we must have trees before fruit, I have elected to confine myself to the above subject and to such points as I think are most generally overlooked.

In planting, the soil should be beaten in around every root as firmly as it was in the nursery, if possible. No doubt a great many trees are lost for want of this precaution, while others make but a sickly growth unless heavy rains compensate for the omission.

Instead of cutting back the top and branches, as we should with peach trees, thin them out only, to balance the loss of roots, and leave an open top of a few stout branches, not a bushy, broom-like bunch.

We can plant beans, cabbage, potatoes or melons in the orchard to pay for cultivating and the use of the ground, but I have found large corn shades the trees too much for their good, though it was far less hurtful than small grain, sod or weeds. Small grain and sod are worse than weeds, and almost death to young trees, nor have I seen any orchard, young or old, that seemed to enjoy them or would not have been better off with clover, frequently broke up and cultivated. I have seen old orchards revived by a fitful use of the plow, ax and saw, but shall always believe they would have been vastly better off with pruning every year and cultivation at least every second or third year. I imagine that most of the great quantity of low-priced apples in the markets might just as well have been mostly first class, and brought double price, and four double the profits to growers, if this precaution had been taken in time.

In plowing up old sod in the orchard, the apple roots are found running so near the surface, that it is impossible to avoid cutting and tearing up many of them, which must counteract the benefits seriously, and could easily be avoided by keeping the surface continually open.

It is quite common to hear people boasting of their early bearing trees. To me it is a sure indication that they have been seriously stunted by want of culture and pruning. The same treatment continued for ten or fifteen years is encouraged by profuse bearing, and the owner is complimented on his remarkable success and good management, especially if he has not lost more than one-fourth by the borers. About that time we find scarcely a twig of the current year's growth long enough for a grafting cion, it begins to bring only second class fruit, and but little of that, which is mostly charged to unfavorable seasons, soil, climate, diseases, etc., etc. Then perhaps comes the revival process above alluded to, with gratifying results, but if it is not continued and persisted in, we have no more

right to expect permanent results, than occasional feeding of other live stock. We feed our horses, steers, etc., regularly every day, and examine their condition at least weekly even when on pasture, spending a great deal of time that is scarcely taken into account at all; we study and cultivate our other crops of all kinds to the best of our ability, often under disadvantages that never can be taken into regular estimates; but apple trees may show their stunted condition to a man at a car window, as plainly as a starved pig, yet the owner thinks it is just right, until his usual harvest fails to appear, and then perhaps only to complain of hardship and misfortune, and in fact he has got almost as big a job on his hands as a neglected hedge would be. It takes some people a long time to learn that it is cheaper to feed hogs on clover and corn all summer than to allow them to starve in the lanes and bare woods, although, like trees, they manage to live and accumulate a great appetite; but some have learned it, and some may learn yet that apple trees must also be fed and have attention in proper season.

Some few farmers make a good crop nearly every year, and probably make the most money in rather extreme wet or dry seasons, because they then get better prices. In the exceptional few years when crops almost grow of themselves, the prices are likely to bring smaller profits to them. So it is in fruit growing. If all the orchards could be relied on to bear as full crops every year, as they did once a few years ago, there would be need of caution against planting extensively. I think the rarity of such years rather a blessing in disguise than otherwise, because it stimulates those who are susceptible to exertion, which they might otherwise miss, as well as the rewards. The provoking general inattention, and the insect enemies and diseases, all serve to give a laboring man a better chance and make him a better and more useful man to the world than he would be without them. There is no danger of glutted markets, except in those uncommonly favorable seasons, and then good fruit will bring a paying price; and we should be prepared to put a larger proportion in shape for holding to another year by evaporating, when it is likely to bring full prices again.

That apple trees need pruning every year (some varieties and individuals excepted), and should never be sod-bound or encumbered with crops of small grain, that arrest and appropriate moisture and fertility before it can reach the tree roots at the time they most need it. I feel very positive of this, because I see it demonstrated in almost every orchard. But when it comes to detailing just what I mean by pruning I feel more diffident, and freely confess that I would like to

know more than I do. Some may say that nature never prunes, but I say she does; and even if she did not she would probably never have produced even a Gilpin apple without the coaxing and mending hand of man. Notice that thicket of young sapplings, perhaps ten or twenty feet high, and so close together that if all could grow to large trees a man could hardly crawl between them edgeways. And why do we find no such forests? Then, again, there is scarcely a branch you can reach; it was not always so. Every sappling had once some branches near the ground; what has become of them? Nature starved them out by allowing others to crowd and shade them. She will dispose of nine-tenths of the sapplings in the same way. You can assist her by cutting them out at once. But if you want only tall, straight trees, you will take only a small part any one year. Just how much to take each time, or how long to allow any to remain that we know must sooner or later succumb to natural selection, is a question for individual judgment on the spot, or guess-work with me.

Now go with me to the orchard, if you please. There is a young apple tree just planted from the nursery. It is straight and smooth up to two or three feet, where it has a nice head of branches every two, four or six inches, so well balanced that it seems a pity to take out any of them, and most people would not do it. The nurseryman might have done it, but those left would have been more liable to get broken in rough travel to the new home. But if we leave them all on, the large number of leaf-buds may exhaust all the material stored in the tree before the roots can replenish it, leaving the new owner "very sure it was dead when he got it," as in nearly all cases of failure to grow. However, the branches need thinning out for other reasons. We should plan the framework for a distant future, even at the expense of present appearances, if necessary. Nature always provides for more branches than are ultimately needed, though they doubtless answer a good purpose for a time by assisting in elaboration of crude sap, and the difficult question with me is how long they should be left on, or when they have fulfilled this purpose and begin to absorb nutriment that would go to the growth of others if these were removed. In the thicket nature removes the surplus rapidly and early, and some species, like the oaks and pines, seem to yield easier than such as maples and apple trees, which are more persistent, and may retain single branches close to the ground, vainly endeavoring to become co-leaders, to the evident injury of the main tree; and we place the orchard trees so far apart that they cannot assist each other as in the thicket. The only natural pruning they can get is by the branches crowding and shading each other, and this

operation is so slow that if we only keep watch of when the process begins, our purpose of growing improved instead of natural fruit will be defeated. Examine that old tree with six to twenty branches starting nearly at the same base. It was evidently beheaded when young, and a large portion of those branches have ever since been striving to take the lead and distance the motley crowd, while the rest have strained every sap-channel to keep a few twigs in reach of the open air, as if in full consciousness that life depended on the effort. You find but little and poor fruit on them, if any, and they show plainly now that they should have been removed with the thumb and finger, or at least with a pocket knife or hand shears, though now requiring the saw, for it may yet take nature a good many years to strangle them, and they are lately said to draw more substance from the tree while remaining after death than they do when alive.

We can therefore learn but little by inquiring what time nature does her pruning. We can only learn that we should anticipate her workings by many years; and watch results as to whether growth is promoted or retarded by doing it early, or allowing the surplus to remain for a longer period. We cannot hope to learn much by bringing in a kit of rough tools once in five or ten years. A man who thinks as much of his trees as others do of their calves, colts and cows, will surely go about them and see to their needs more than once a year. By so doing, he will find a little here and there that had better be removed at once, and have them in good shape and thrifty growth all the time, without ever causing any serious shock or check on them. He will surely forego the boasted early bearing, and rather retard them, as the breeder would his fine stock, in full conviction that he would get but puny returns, at the expense of much more excellent ones in the future.

Cutting off the leader, to force branches near the ground, was strenuously advocated twenty-five years ago, and seems to be just taking hold on some people now, though probably long since abandoned or modified by most intelligent horticulturists. The object was to have low headed trees, in better shape to resist severe winds. But is there a tendency in apple trees to grow too tall? Even a maple, growing twenty to thirty feet to the first branch in the forest, grows a wide, spreading head, when isolated like an apple tree. In forcing a large number of branches, as alluded above, it seems to me we first check the natural growth, and then defeat our object, by allowing so many to compete for co-leadership, forcing them to stretch their necks to the utmost to reach the open air, probably higher than they would have done if allowed their own way. And

those branches will all become as naked and bare for several feet, or nearly to the top, as the stem would have been if trimmed to nearly the same height. If the growth of the leading ones is nearly equal as is likely to be the case, they each have a tuft of small branches at the top, forming a shade to all the inside growth and fruit, and a practically solid outside surface, whereas, if they had been trimmed out, the remaining ones would have each presented more the appearance of a small, isolated tree, with sub-branches at intervals, instead of a mere tuft like a forest tree, with more surface for good fruit and growth. I consider all such heading back while young, and allowing branches extremely low, a serious violation of nature. Those low branches will either endeavor to become leaders, have sub-branches pointing to and intermingling with others on the main stem, forming an inextricable jungle, or they will content themselves with reaching out as far as they can, droop towards the ground, allowing the hogs to reach their pale insipid fruit, and finally show signs of giving up the struggle and needing removal. Would it not have been better to remove them ten or twenty years sooner? Have they made a shade for the trunk and protected it from sun scald? I can not dispute that, but would be very thankful for positive proof that the sun ever injures a trunk otherwise healthy, and I will apply some more efficient protection than a slender branch.

Summing up and applying my theories in practice, I aim to preserve the leader all the time, unless it takes an erratic turn to the northeast, when I frequently have to lop it off eight or ten feet high to preserve the equilibrium of the tree. I trim off the lower branches as soon as I think the tree can spare them, up to five or six feet. I leave branches on the main stem six to twelve inches apart on alternate sides, and trim these out in a similar manner, seldom allowing more than one sub-branch to start from the same place, or nearer than six inches to each other. In a few instances I have afterwards found these lower branches too low for the team to pass under, and after removing them the tree would be unreasonably high, to its serious injury, as it appears at present. But on the average I think them about right, at five or six years from the nursery, and as they get older, the high stems will be far less apparent. They have made larger growth than most of trees I have seen of the same age, though the tops are hardly proportionably large, and have borne but little fruit yet. I frequently overhear remarks by people passing on the road, that I have surely ruined my trees, and cannot expect much fruit, but I am content to wait even a few years longer. They seem to take no account of the extra clean cultivation the trees have re-

ceived, which I think causes their tardiness as much as the pruning.

I have to admit one somewhat serious difficulty however, that the trees are quite subject to become leaning to the northeast. I see perhaps as many low-headed trees afflicted as much as mine, but the low stems make it less apparent, and the tops are really not so much out of balance. To correct this, I take No. 12 or 14 wire, turn it round the tree near or above the first limb, first applying a six inch section of stiff linn bark, and fastening the other end to a small stake firmly driven into the ground, in the same row as far as permissible, sometimes using a wire stretcher and extra ropes to straighten the tree. If I should ever plant another orchard, I will apply these precautions as soon as the trees get too large to straighten by hand and firming the ground to them, after heavy rains and wind, regardless of their present need of the aids. The bark and wire seem to be no injury to the tree, if shifted once a year.

The following was received from Mr. Wm. McCray, Glassville, Caldwell county, Missouri:

MR. L. A. GOODMAN, CARTHAGE, MO., December 7th, 1883.

DEAR SIR: By your favor and kindness, I have just received a copy of the report of the Missouri State Horticultural Society for the year 1882, for which you will please accept my thanks. I would be glad to be at Carthage during your meeting if it was in my power to do so. As I would no doubt learn many good lessons in regard to fruit growing from the many wise men that will be there. Our apple crop in Caldwell county, this year was not a large crop, many orchards not protected by timber belts, failed to bear apples. My orchard is very well protected by a timber belt, and therefore we had quite a good crop of apples. I sold to a firm from Baltimore, Md., 193 barrels of apples at the following prices, viz: For Ben Davis and Willow Twig, \$2.00 per barrel; for Janeton, Pearmain, Limber Twig, Romanite, \$1.75 per barrel; for various kinds of fall apples, \$1.25 per barrel; a deduction of 25 cents from each barrel was made for hauling to the railroad, about fifteen miles distant.

My orchard has been bearing apples about twenty years. The Winesap trees are all dead and gone. My oldest Ben Davis trees are also dead. My Janeton or Rawls Janet trees, that were set in the orchard in the spring of 1854, are still bearing good crops of apples. Some of the lower or bottom limbs of these trees are beginning to die, but this is caused no doubt, for a want of lime in the soil. As

chemists tell us that there is a *remarkably large* per cent. of lime in the ash of apple tree bark and sap wood ; it is strange that apple trees live and bear large crops of apples so long without lime, one of their abundant elements, being sown or scattered under the trees. It is unfortunate for the great mass of the people, that such a very few persons out of their ranks are qualified to plant and raise orchards successfully, much labor and a long patient waiting must be endured. No wonder the price of apples is so high, when we take into account the many drawbacks that attend growing orchards. There is the constant enemy, the borer, we must destroy that pest or our orchards are gone. We must supply the natural chemical elements that are constantly being taken from the soil for the growth of the trees, and the crops of fruit of many trees are destroyed by winds and storms ; thousands of trees are ruined by being cut or pruned too much. Two of my friends told me lately that they had ruined their orchards by pasturing them too much with hogs. I believe there is something true in the assertions of these friends. I have not let hogs run in my orchard and it is doing well, under all the circumstance against it. When I planted my orchard I planted a large proportion of Rawls Janet. I am sorry that I did not plant many more. I have been profited by the Janetons more than any other kind of apples in my orchard. There are very many excellent varieties no doubt, that are unknown to me, and for this and other reasons I am thankful to you for your kindness in sending me the Horticultural report of our State, and I feel sorry that I am not capable of writing you a more interesting letter on the subject of fruit growing. When I know our lots are cast in such a favorable country as the State of Missouri, where we can by industry raise and produce from the ground so many kinds of crops, fruits, etc., etc., necessary as food for man and beast, I think we ought to be very thankful for the favorable circumstances surrounding us.

Hoping that your meeting at Carthage will be the cause of much good being done for our common country, I remain

Yours truly,

WILLIAM McCRAY.

Next followed a paper :

THE APPLE.

BY JAMES A. BAYLES, LEES SUMMIT, MO.

This subject is broad enough for a book of no little size. I hardly know how to treat it, in a short letter to be read before the distinguished members of the Missouri State Horticultural Society, at their annual meeting, but suppose it was meant to be in a practical manner in reference to the money value of this fruit.

If my friend, Mr. Goodman, had wanted an article to sound well when read, I am positive he would not have asked me to write one, for I am only a worker ; have no time to write but short business letters.

I do not wonder that the apple, the great fruit of the United States, and, I might say, of the world, is demanding more attention now than ever before in the history of this country. As a nurseryman, applegrower and packer, I am in a position to know and feel the new impetus that has been given to growing fruits for transportation to supply the markets that are short in the various parts of the country, in fruit producing districts in what is termed off years, and in non-producing districts. This is brought about by and made necessary from the fact that the people of these United States are growing rich, and adding luxuries to their tables as fast as they can afford to. It is no longer required to deprive our children of the pleasures and benefits of plenty of apples, because they may chance to live in a country or section where there are no apples. But I might say railroads run almost everywhere, equalizing the price of necessary articles of living, including fruits, etc. This was forcibly brought to my mind last winter whilst I was at Galveston, in the prices asked for oranges on the stands in that city. Why, gentlemen, they were cheaper in Kansas City than in that beautiful city of the south. This fact reminded me of a little promise I made my children some ten years ago, when I was planting my orchard ; that when it got to bearing, I would take a car of apples down south and swap them for oranges. I have changed my mind a little ; I will now fulfil my promise, if they can eat that many ; sell my apples in the south and buy my oranges in Kansas City.

Nearly every one knows how rapidly the consumption of southern and foreign fruits is increasing in the northern and middle states, and the consumption of the apple is as rapidly increasing in the

parts of the country where they are not grown or cannot be from conditions of soil and climate. To meet this demand for fruits, to foster the horticultural tastes of the people of Missouri, and to instruct them in the ways, so they may gratify these tastes, which I claim are inborn, is the prime object of the gathering together of this body of horticulturists here assembled, each bringing the best and finest specimens of their apples, and spreading them out upon the tables, that *all* may see what we have done, and what the people of this great commonwealth can do.

I shall speak particularly of the apple and the means of increasing its production and sale. In this country of free thought and free speech, when so many often ventilate their knowledge on subjects they learn little about, it is no wonder the minds of many listeners are confused. The man who plants apple trees must know *himself*, for what object he is planting them. If it is to grow fruit for his family for the whole of the apple season, he should plant a succession of varieties, that will ripen from early to late, and that will be or have been the most generally satisfactory in his section, in quality, appearance, productiveness and hardiness. To tell the public what to plant, is, I have found almost arbitrary, depriving them of their inalienable right of free judgment.

As a nurseryman, we grow apple trees to meet the wants of the people in the different localities of the country, and go upon our acquaintance with kinds in the propagation of these trees, selecting some thirty varieties out of the hundreds that are best, or that we think are best for general cultivation. An old saying, "A man convinced against his will is of the same opinion still." I know of only one exception, a friend, a number of years ago came to the nursery and wanted fifty Jeniton apple trees; I persuaded him, (so he says,) to take fifty Ben Davis, and he remarked to me recently, that it was the only time in his life, when he had been persuaded against his judgment, that it had resulted to his benefit. It is a dangerous thing to parley with a man's judgment, and if any one does not think so, let him first try it on a woman, the so called weaker sex. I think I know more now, than then, and presume if a man should call for Jenitons he would probably get them.

For commercial planting the question of varieties comes down to a narrower limit, but I must admit, a more difficult one to comprehend. The growing of apple trees is becoming an industry that requires more thought and capital than most people imagine, and it looks now as if the tree trade, would go more than it has, to those who can best meet the people's wants for the present and future. It

is to the persons who grow the trees that much depends upon how fast this apple growing section of Missouri and Kansas develops and bears off some of the sales that Michigan has heretofore gained, for what the nurserymen grow, the people will plant. I will say now that the outlook is; that we have from this time forward to furnish the planting public, commercially, more Ben Davis and Jonathan and less Jeniton. Ben Davis (I would like to have been acquainted with the gentleman) ranks at the top of the list, for profit, and there are good reasons for the place it occupies, and I believe it will maintain its place at the head. It is no doubt the best variety for evaporating, will make more pounds to 100 lbs of green apples than any other variety. The fruit is white, rings large, and possesses abundance of sugar. Owing to its size, productiveness, keeping qualities and ease and rapidity with which it can be gathered, it must be planted largely for this purpose. This variety has had more friends and enemies than any other variety in the long lists of apples in the catalogues of the country. If it is not good, it is *handsome, and that settles it*. But one of its enemies snarls out against it, he whom I must believe has grown old,—lost to the appreciative sense of beauty—says it is still, only fit for hogs to eat. I know of only one way to meet such a man, and that is through the market reports, which would give his pocket, (if he had the fruit to sell) a silver lining. Jonathan is fast outranking Winesap, and unless the clerk of the weather gives us more rain in September, the Winesap will have to lose some of its former precedence. Red Romanite flourishes under our October sun, comes out well on the homestretch and has lasting qualities. Willow Twig has some good points, some bad ones, nurserymen don't like to grow it, and it will not be planted largely. Huntsman's Favorite is coming pretty fast to a front seat, has a rich yellow color, keeps quite well, and is so highly perfumed that most every packer likes to have it about to help other kinds that don't smell so sweet. Lawver, not entitled to the place it has among nurserymen. Among fruit growers it has no reputation, and I don't think it will get one. I do not wish to say more about varieties, but leave that to the taste and judgment of the planter. What stands in our way to success in apple growing on a large scale, is the depredations of insects, which I think we must fight as best we can. No apple that is not perfect, will keep and look well on the market. Varieties, as a rule, of the highest quality suffer the most from the little pests, or at least this is my observation. I would like to see an effort made by our State Society to introduce a uniform size for our apple barrels. Many barrels now in use, and I might say the ma-

fority, hold three bushels, and this sized barrel was introduced by the manufacturers of cooper stack and barrels, who select culled staves and heads from flour barrel stock and make them up into fruit barrels. I think it pays to use a nice clean barrel for apples, and I believe two and three-quarter bushels is the size for general use, and that this size will be satisfactory to the public if adopted. The great stride the industry of apple growing and evaporating is taking is not comprehended by all in our State, and the planting of large orchards has begun and will continue, and result in increased revenues to the growers, and a general benefit to the whole country. For more than twenty years I have been laboring in this line and now I see greater possibilities in the future than ever before for continued success.

This was followed by

THE ORCHARD AND ITS ENEMIES

BY A. C. HAMMOND, WARSAW, ILL., SEC'Y STATE HORTICULTURAL SOCIETY.

From all sections of the country, east and west, comes the complaint that orchards are failing. That the crop is becoming annually lighter and poorer in quality, as well as that trees are dying and countless hordes of insects preying upon both tree and fruit.

During the decade from 1870 to 1880, the orchardist of the west had three fairly good crops, four partial crops and three failures. In view of these facts the most sanguine began to be somewhat discouraged and to have some doubts in relation to the speedy accumulation of the fortune they so soon expected to possess; but the immense crop of 1880 gave us new life and hope and we looked forward with bright anticipations to the fruitful years that were to follow. The failure of '81, however, was not a serious disappointment, as the trees were greatly exhausted by the crop of the previous year. But when in '82 the crop (except in favored localities) failed again we *were* disappointed, but attributed it to late spring frosts, and confidently expected that '83 would prove to be a prolific fruit year. But still the genius of disappointment pursued us, and very naturally the third successive failure caused us to look about for the cause.

First, we are told by some of our horticultural wiseacres, that

the peculiar elements of the soil required to perfect the fruit are exhausted, and that we can never again grow such crops of large, fine fruit as we have in the past. On the thin soil of the Eastern States, where ten bushels of corn cannot be grown on an acre without the use of fertilizers, this thing may apply, but on the virgin soil of the West, where trees make a larger growth in ten years than they do there in twenty-five, it is not very plausible, and few intelligent men are willing to accept it.

Again, we hear the theory advanced that the late spring frosts we are so subject to, injures the bloom and causes the young fruit to fall from the tree. But when we see one orchard perfectly bare of fruit and another, perhaps within a few rods, bending beneath its burden of crimson and gold we conclude that we must look further for the cause.

Others tell us that the old varieties are deteriorating, and that the only possibility of increasing our annual fruit crop is by introducing new varieties. There may be some truth in this theory, as many of our once popular varieties, such as Early Harvest, Red June, Fall Pippin, Newtown Pippin and Ortly—and perhaps Winesap and Jannet should be included in the list—have years ago ceased to be profitable in most of our orchards. But as some of these varieties are still productive under favorable conditions, in a few favored localities, we do not understand how the failure can be attributed to deterioration. We are therefore forced to the conviction that meteorological influences and insect depredations lie at the bottom of most of our orchard failures. The winter of '82-3 was the most disastrous to the orchards of the West ever known in its history. In Ohio, Indiana, Northern and Central Illinois, Wisconsin, Iowa and Northern Missouri, at least twenty-five per cent. (some intelligent horticulturists place the loss at a much higher figure) of the bearing trees are dead, or so badly injured that they will never bear again. And, in my opinion, the failure of the apple crop the past season was due to the injury inflicted upon the trees by the warm, wet fall of 1882, and the sudden and unprecedented cold that followed. But were I asked what is the principal cause of the failure of our apple crop, I should answer, insect depredations, and I have but little doubt that almost every orchardist who has given the subject any attention, will agree with me. Many inexperienced apple-growers suppose that when they have escaped the ravages of the Borer, the Canker Worm and Tent Caterpillar they are comparatively safe; but, forsooth, the fight is but just begun. With the opening of the bud the Codling Moth begins its work of destruction, and we all know

how thoroughly it is done. Then the Tortrix (or Leaf Roller), the Leaf Skeletonizer, and a troublesome little insect, known to orchardists as the Embryo Apple-eater, follows it up very closely, and when they have all got in their work the destruction is nearly complete. It is not my purpose to give a scientific account of the habits or work of these insects but to speak of them in such a manner as to call the attention of orchardists to the serious nature of their depredations, without befogging their minds with scientific terms.

The first two begin their depredations early in the season, destroying the blossom and feeding upon and webbing the leaves and young fruit together, until it is three-fourths of an inch in diameter. After this they continue to skeletonize and feed upon the leaves for several weeks. The last mentioned often destroys from twenty-five to fifty per cent. of the young fruit by feeding upon it. The Tortrix often does irreparable injury by eating the fruit buds while in process of formation, of course causing barrenness for the next year.

The Thrip is another insect that works great injury to apple blossoms. If we examine our trees about the time the buds are opening we will often find immense numbers of these contemptible little pests swarming in and about the blossoms, and that they have so injured the delicate organism of many of them as to make fertilization impossible, and of course we have no fruit.

The Plum Curculio has also been quite destructive in many orchards, causing the fruit to be rough and deformed. In one of my own orchards, about ten years old (Ben Davis), which should have produced large, smooth fruit, scarcely a perfect specimen could be found, and the loss caused by their depredations was hundreds of dollars.

Hon. J. N. Dixon, of Iowa, who is one of the most intelligent and observing orchardists in the west, has given much attention to this insect question, and tells us that all that feed upon the foliage can be readily destroyed by syringing the trees with arsenic water. He has been able by this means to measurably rid his own orchard of Canker Worm, Codling Moth, Tortrix and Leaf Skeletonizer at a very small expense. But how shall we destroy the Curculio? is a question that neither our entomologists or orchardists have been able to solve.

In view of all the drawbacks to successful fruit-growing, such as winter killing of trees, spring frosts, and the depredations of untold hordes of insects, we begin to think that successful apple-growing is becoming a matter of great difficulty and must very soon fall into the hands of the professional orchardist. Fifteen or twenty years

ago the apple crop was almost as certain as a crop of corn, and could be profitably grown by the average farmer. But as diseases of trees and fruit increase and insects multiply, it becomes evident that the field must be abandoned to the professional orchardist. Every farmer should, and doubtless will, continue to grow fruit for his own use, but growing apples for commercial purposes, as a farm crop, will not long continue—if it now is—profitable.

I will close this hastily written, rambling paper by a passing reference to our lack of satisfactory varieties. Twenty years ago we supposed that we had passed the point when it was necessary to discuss this question; but many of those that were highly prized at that time are now considered almost worthless, and for the past ten years almost the entire planting for commercial purposes has been Ben Davis, the poorest in quality in the whole catalogue. That we need a new apple, combining the good points of the Ben Davis with the delicious flavor of the Jonathan, Spitzenberg or Grimes' Golden all will acknowledge, and when it is found it will, doubtless, like the Ben Davis—the original tree of which is still standing within a few miles of where I am writing—be a chance seedling.

Our agricultural colleges and experimental stations are doing a valuable work by collecting a large number of varieties of fruit, both new and old, and carefully testing them, as well as by a scientific system of hybridizing, which promises good results.

If every intelligent orchardist will carefully test the new and promising varieties that come under his observation we may reasonably expect to soon find something better than our present popular varieties.

DISCUSSION ON THE APPLE.

Hon. I. S. Haseltine was called upon to give his views on the orchard and pruning. Does not believe in pruning at all, either with his apple trees or grape vines. Thinks we should use more common sense in growing trees and we will have better success. He never digs a large deep hole to plant trees but only large enough to hold the roots well. Prefers to set the trees in the sod or meadow land or even prairie land. Puts one half of a pail of water with each tree; then mulches heavily and they are done. Planted 16,000 Ben Davis trees last spring, all in grass land, and never lost any to speak of. Has the best success that way. One time he planted seventy

trees along the railroad, part on the embankment and part in prairie grass. They have stood there ten years and have borne good crops of good apples every year, and they have never been cultivated nor trimmed, but have been heavily mulched every year. Thinks we have an opportunity to make the state richer than the mines of gold, and silver make the states of California or Colorado, by just planting apple trees. His orchard is a success and has never been cultivated or trimmed. Takes out the borer every year. Will always plant the Ben Davis. Last year he sold his crop as follows: Jan-net, 60 cents, Winesap, 70 cents, Ben Davis, 90 cents, per bushel. Has his ground in clover first, and then seeds to timothy. Cuts a crop of hay from the land and then pastures the land with sheep, whenever the meadow will permit, during winter.

Mr. Glassford has a great deal of trouble with rabbits. Ties up the trees with bands of hay. Mr. Sheply uses strips of lath cut in two pieces and finds them very good, and they last for a number of years, and if tied loosely will not have to be replaced for some time.

Mr. Gano, speaking of the taking off two crops from the ground, says that it will soon run the ground so hard that he will find that it affects the health of the tree. A crop of fruit is enough to take from the ground without anything else. Should prefer to cut the grass with the mower and let it lay on the ground.

Mr. Goodman spoke with reference to the form of a tree. Taking a one year old tree, the branches, as every one knows, start at right angles from the tree from the ground up to near the top, where they shoot upward. The terminal bud should never be injured or removed, but allowed to continue its growth upward, while the branches will continue nearly at right angles. In a few years you will thus form a tree of almost perfect shape and pyramidal in form. This is the correct growth of the tree and should be encouraged in every way. Do not remove any branches near the ground, but let them grow and the lower ones will be smothered out as soon as they are not needed for the protection of the body. Such a tree will grow better and be more healthy than in any other way. Such a tree will never have any forks to split or break off and is more easily kept in shape than any other manner of treating them. I found this to be much the better plan, after I had planted and grown about 5,000 trees in the orchard, and, like many other things we have to learn from experience, it is a costly experience.

Mr. Goslin thinks we must take into account where our market will be and what varieties will sell best. So much has been said about the Ben Davis being the most profitable variety. But with

them, in Northwest Missouri, they find the Jonathan to be the most profitable. He gets \$4.00 per barrel for them and only \$3.00 for the Ben Davis. They are a good bearer and would plant them very extensively. He kept them well until March and can be kept until January very easily. They are an early and abundant bearer, nearly equal to the Ben Davis. Best location for an orchard is on the northwestern slope. Whenever he packs apples uses carbolic acid and sprinkles the inside of the barrels with a little and finds that it is one of the best things to cleanse the barrels.

Mr. Goodman said it was also one of the best articles to sprinkle the cellars with to purify them; also thinks it helps to keep the fruit. Copperas water is an excellent preservative and he always uses it on the floors and bins of the cellar where he stores apples. By using a little carbolic acid with the water we have the best thing we can use. To keep borers out of trees, tobacco stems placed around the trees is a sure preventative, and persons who cannot get them can easily grow a patch and put the tobacco around the trees. It will also keep the woolly aphis in check if not entirely kill it. It is the best use tobacco can be put to.

The following from Jacob Faith, of Montevallo, is valuable:

"Below I give wash for fruit trees that I have used for the last four years with perfect success, to keep rabbits and borers away: Take six gallons of soap suds, (that in which clothes have been washed is as good as any,) put in one peck of lime and four pounds of sulphur, when the lime is well slacked, stir in one quart of gas tar and one pint of crude carbolic acid; if wash is used in spring, leave out the tar and put in one quart of soft soap instead; if the wash should become too thick, use more suds. This wash not only keeps rabbits and insects away, but makes trees healthy. Wash in November and May. I am having good success in grafting the peach, and I believe that in ten years stone fruits will be grafted extensively. In setting Black Cap Raspberries, I set in rows eight feet apart, two feet apart in the row; Red Cap, rows six feet apart, two feet apart in the row."

The Chair thinks that this matter of not pruning should not be allowed to go out from the society without a protest, and for one, he would like to oppose this wholesale letting trees take care of themselves. He thinks the apple tree needs careful attention, pruning and cultivation. Does not believe in no pruning or no cultivation. Would dig holes twice as large as the roots needed, and fill in with top soil, and plant three inches deeper than they stood in the nursery. On timber land, would trim them shoulder high, and on prairie,

about two feet high ; would do most of the trimming with the thumb and finger while the tree is young, by rubbing off the buds which would form branches where not needed. With careful attention, good cultivation and judicious pruning where needed and when needed, we can as easily have our trees in good shape and in a healthy condition when they begin to bear as to have them a brush heap.

The Secretary says this is the old rule for us, and we all know it ; but it is hard to preach against the success of some orchards not pruned.

Moved that we adjourn until P. M., and take up the discussion.

THURSDAY AFTERNOON.

Order of exercises :

Discussion of the apple, (concluded.)

Essay on Native Fruits—by Mr. Burson.

Election of officers.

Reports of Societies and Counties.

Miscellaneous Business.

Reports of Committees.

The apple discussion was resumed.

Mr. E. Liston : In passing through the country, is sorry to see so many orchards ruined by pruning ; persons have a wrong idea about it ; they think the more we cut the better trimming it will be. But yet, he cannot get along without pruning a little, especially on the north-east side. Would plow and cultivate well during the whole of the summer.

Mr. Glassford : Prefers no pruning at all to pruning too much. Yet some kinds of apple trees need it much more than others, and it is well to look to the growth of the tree before cutting much.

A. W. St. John : In growing his orchard he followed the books very closely, and had some fine trees and fruit, but not near the success of Mr. Haseltine. Trees planted in sod need to be most thoroughly mulched and that for a number of years, would prune a little, especially to keep his trees in shape. Many trees, low headed, are now beginning to break down, and it is only a question of time when they will all go, and perhaps Mr. Haseltine's will go the same way before many years.

The Secretary says this is only another proof of the statement he made about starting a tree with a leader and have the branches all as near right angles to the body as it is possible to have them. You will never have crotches if you start your tree with a leader and keep it so. A great mistake is to cut off the top of a yearling to make it branch out; or to cut off the leader of a two or three year tree to make it head low. The mistake is in taking off the branches when the tree is one year old, growing the second summer. *Never cut off the terminal bud.*

St. John spoke of the stony land as being good for fruit, and in fact the best of fruit land in south-west, Missouri. Mr. Emry put out an orchard in very stony ground, and with good care he has one of the finest orchards in the county.

The result of these discussions is that many have learned a lesson or two that will be of great value to them in future work; while others are more convinced in their old plans and will follow them, and others, in their prejudices are firmer than ever.

ELECTION OF OFFICERS.

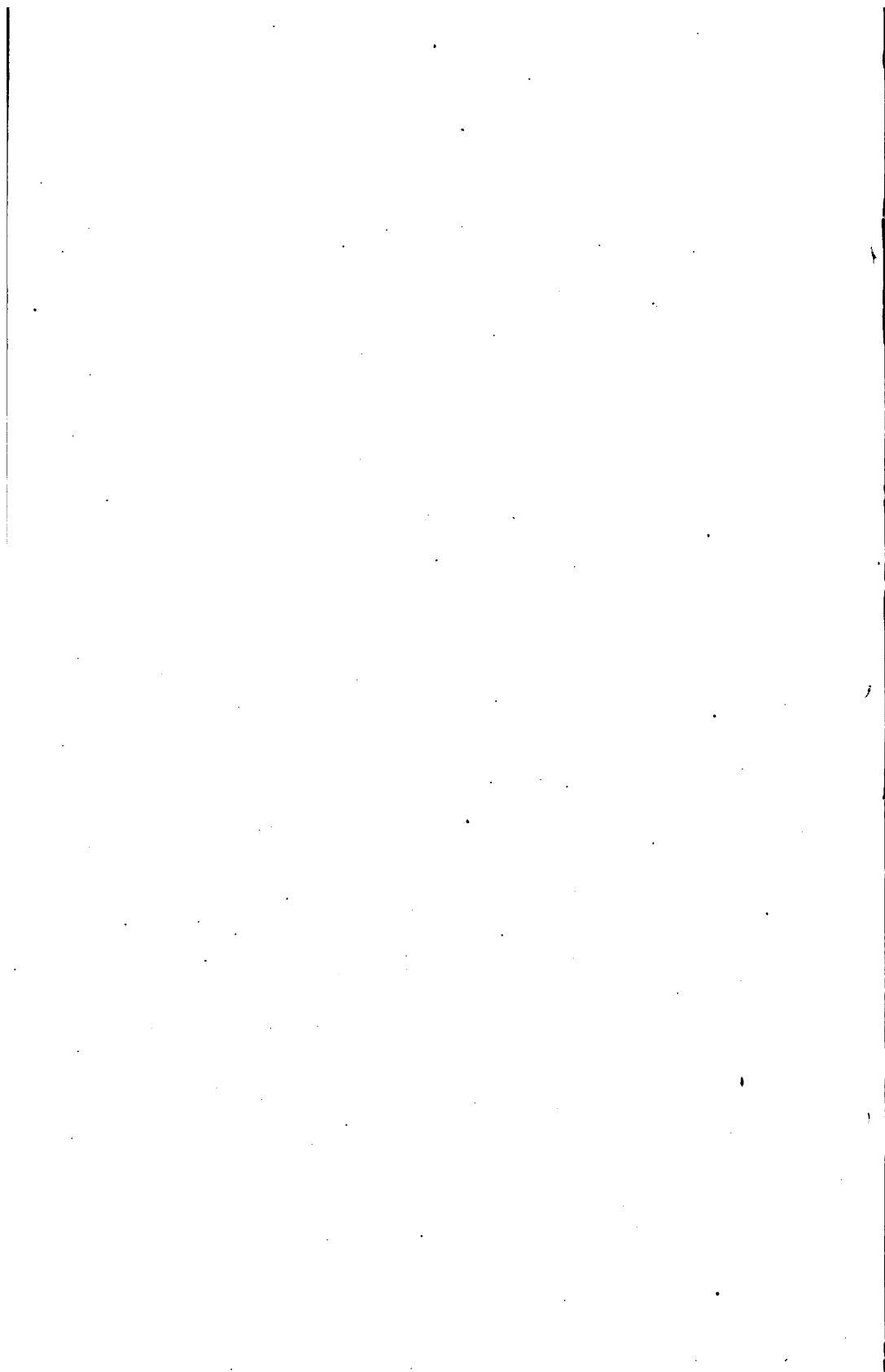
The following officers were unanimously chosen for the year 1884:

- PRESIDENT—PROF. S. M. TRACY, Columbia.
VICE-PRESIDENT—A. W. ST. JOHN, Carthage.
SECRETARY—L. A. GOODMAN, Westport.
TREASURER—J. C. EVANS, Harlem.

Reports of Horticultural Societies

AND

COUNTY REPORTS.



Missouri Valley Horticultural Society,

KANSAS CITY MISSOURI.

PRESIDENT—J. C. EVANS.

VICE-PRESIDENT—W. M. HOPKINS.

SECRETARY—G. W. HOPKINS.

TREASURER—FRANK HOLSINGER.

MEMBERS.

Z. Todd,	H. Kretchman.
L. A. Goodman,	H. C. Garth.
G. F. Espenlaub,	S. C. Palmer.
E. Lindsey,	W. W. Dickinson.
W. G. Gano,	J. E. Fisher.
W. Mustard,	J. D. Heath.
J. D. Gregg,	Dr. Orendorf.
Z. S. Ragan,	W. A. Gosnell.
John C. Blair,	S. S. Hogue.
J. C. Dickinson,	Isaac Owick.
J. F. Howell,	Dan. Carpenter.
Carl Schroeder,	Wm. Butterfield.
S. S. Ely,	Jesse Ray.
W. B. Newman.	

Society meets third Saturday of each month.

PROCEEDINGS

Mr. President, and Gentlemen of the Missouri State Horticultural Society:

At the request of your Secretary, I furnish a synopsis of the proceedings of the Missouri Valley Horticultural Society for the present year. This is perhaps the only local society in the State that has had an uninterrupted existence since its first organization.

Many of the first members have moved away,—some have gone to that silent land from which no traveler has ever yet returned, but some of the old guard are still at their post, having stood by the society in all the trying vicissitudes which are incident to those engaged in horticultural pursuits.

While we are satisfied that our meetings have been of mutual benefit to each other, we are also vain enough to suppose that our deliberations have had some influence in molding the horticultural sentiment of the community around us. One great cause of the success of our society, is the prompt attendance of its members. There have been but few meetings missed since its organization are no matter what the weather may be, there are always enough members present to form a quorum for the transaction of business.

During the winter months our meetings are held in Kansas City. When we receive reports from the various standing committees in regard to the success or failure in their several departments, and map out a programme of subjects for discussion and essays for the rest of the year. From May until October our meetings are held out doors, at the homes of the members.

One of the most pleasant features of our meetings, is the offering of small premiums for all fruit in its season. This creates a spirit of emulation among the members and answers for a school of training, which materially assists in making our exhibitions at the fairs.

The January meeting was held at the office of Judge John K.

Cravens. It being about the coldest day of the winter, but few members were out. President and Vice-President, both being absent, Major Ragan was called to the chair.

L. A. Goodman, Secretary, read his annual report, giving a glowing account of the achievements of the Society for the past year.

The Treasurer's report was read, referred to Executive Committee and approved, showing a balance in the treasury of \$224.00.

The February meeting was held at the same place. President Evans in the chair.

The President appoints standing committees for the year, and the Executive Committee selects subjects and assigns essayists for same.

Chairmen of the several committees report as follows:

Small Fruits—Strawberries and raspberries in good condition. Blackberries somewhat injured.

Orchards—Apples are not injured, but do not expect a large crop this year.

Stone Fruits—Peaches are all killed. Early Richmond Cherries badly injured.

Vineyards—Vines in good condition. Canes of Concord especially fine.

Flowers—Most families have lost their flowers during the winter which will be of great benefit to the florists.

The following premiums were awarded: Best collection of apples, first premium, W. G. Gano; second premium, W. A. Gosnell.

The March meeting was held at same place.

President Evans in the chair.

A large number of the members were present, and much interest was manifested.

Chairman of standing committees reported the following varieties to plant:

Strawberry—Capt. Jack, Windsor Chief, Charles Downing, Crescent Seedling.

Raspberry—Doblittle, Hopkins, Gregg.

Blackberry—Kittatiny, the Snyder being too small.

Apples—Summer and Fall; Early Harvest, American Summer Pearmain, Maiden Blush, Fulton, Mother, and Jonathan. Winter; Ben Davis, Winesap, Missouri Pippin.

Grapes—Concord, Goethe.

Premiums were awarded as follows: Best three varieties for market, F. Holsinger; varieties, Ben Davis, Winesap, Romanke.

Best plate, beauty and quality considered. W. G. Gano on Winter May. Best plate, quality considered, J. C. Evans on Pryor's Red. Best plate, keeper, G. W. Hopkins, on Lansingburg Pippin.

Messrs. Holsinger and Goodman, delegates to the Mississippi Valley Horticultural Association, held in New Orleans, read very interesting reports, in which they gave glowing accounts of the meeting and their reception in the sunny south. The society had on exhibition a fine display of fruit, (some of which had been kept in cold storage since September,) which was the wonder and admiration of all present, and demonstrated that we are situated in the greatest fruit growing belt in America.

The April meeting was held at the same place. President Evans in the chair.

No very important business was transacted. The reports from the various committees were about the same as last meeting. The essayist for the meeting was Uriah McCall; subject, "Top Grafting."

The following premiums were awarded:

Best plate, beauty and quality considered, W. G. Gano on Winter May.

Best keeper, G. W. Hopkins, on Lansingburg.

Best Ben Davis, W. M. Hopkins.

Best Winesap, F. Holsinger.

Best Janet, F. Holsinger.

Best Gilpin, F. Holsinger.

Best Lauree, W. G. Gano.

Best Lady Apple, W. G. Gano.

The May meeting was held at the home of L. A. Goodman. A large proportion of the members and many friends and neighbors were present. This being the first out-door meeting was greatly enjoyed.

It is quite a relief to get away from brick and mortar, dust and smoke of the city and sniff the pure country air once more. With nature's canopy for a covering, the warbling of sweet birds for music and the presence of beautiful flowers, it seems we ought to be happy, at least for the time being. At these out-door meetings the ladies first make their appearance, an event which is looked forward to with a good deal of anxiety by the old bachelors and widowers, of which the Society can boast of a goodly number.

The morning was spent in looking over the adjoining farm of Mr. Dickerson, who is experimenting with about twenty varieties of

strawberries. After this we sat down to a magnificent dinner, spread under the trees, and then the fun commenced. For good square, solid eating we will back the Missouri Valley against the world.

After dinner President Evans called the society to order, and the reports from standing committees were received.

Small fruits—With the exception of strawberries the reports are very discouraging.

Stone fruits—Peaches and sweet cherries a failure; plums and sour cherries a light crop.

Orchards—Apples have dropped badly and pears will be scarce.

Flowers (Goodman)—Flowers in the green-house need close attention, watching the red spider and green fly. Tobacco smoke will kill the aphids and plenty of water the spider.

Mr. Holsinger, from the Committee on Entomology, reports the curculio and gougher as very numerous and busy at work. There being no peaches, plums and cherries will suffer.

Mound your trees to protect them from the borer.

Several plates of apples were exhibited which were in a fine state of preservation.

Premium on box of strawberries was awarded to H. Kretchmar; variety, Crescent Seedling.

The June meeting was to have been held at the home of Judge Cravens, but the rain forced what few members were present to an adjoining school house, where a very interesting meeting was held.

There was quite a fine display of strawberries for so late in the season.

The following premiums were awarded:

Best collection of strawberries, J. C. Dickerson, \$2.00. varieties: Cumberland, Triumph, Sharpless, Windsor, Chief, Miners' Prolific, Golden Defiance.

Best three boxes for market, E. Lindsay, \$1.00. Varieties: Capt. Jack, Chas. Downing, Crescent Seedling.

Best box for table, W. M. Hopkins, 50 cents. Variety: Mount Vernon.

Best box, size and beauty, E. Lindsay, 50 cents. Variety: Sharpless.

Best box of Miners' Prolific, C. B. Warren, 50 cents.

Best box of raspberries, E. Lindsay, 50 cents.

Best box of cherries, L. A. Goodman, 50 cents.

Best collection of apples, F. Holsinger, \$1.00.

Best vase bouquet, L. A. Goodman, 50 cents.

Best hand bouquet, Ella Hopkins, 50 cents.

The July meeting was held at the home of Major Frank Holsinger, near Rosedale, Kansas. There was a large attendance from both states, and the meeting was very interesting. A magnificent table was spread under the trees in the yard, which was loaded with every conceivable kind of edibles, which rapidly disappeared under the voracious charges of those present. Some of the city members eat as if it was the first square meal they had enjoyed for six months, and the last they ever expected to get on earth.

The display of fruit, considering the season, was very creditable, and consisted of apples, pears, peaches, plums, raspberries and blackberries.

The reports from standing committees, a repetition of former meetings. Judge Newman, of Wyandotte, reports in his vicinity, a blight on the raspberry; leaves are attacked on the under side, and curl up. Mr. Goodman believes it is caused by an insect—while Mr. Lewis is of the opinion it is mildew, and caused by wet weather.

The society decided to make a show of fruit at Bismark and Kansas City.

The August meeting was held at the home of Prest. Evans, in Clay county, Mo. This was the largest gathering of the season, at least three hundred persons being present. The neighbors and friends of President Evans generally make this the occasion of an annual holiday, and there is one day in the year at least, in which a large number of citizens of Clay county are horticulturally inclined.

After dinner, the meeting was called to order by Prest. Evans, and the usual routine of business gone through with.

Major Holsinger made a report on the cabbage butterfly, giving a description of its habits, and recommending the use of Persian insect powder for its destruction.

Interesting essays were read by L. A. Goodman, on budding, and Major Ragan, on ornamentals.

Committees were appointed to take charge of fruit at Bismark and Kansas City fairs, and arrangements made to send fruit to Philadelphia to exhibit at the meeting of the Pomological Society.

The following premiums were awarded:

Best collection of apples, W. G. Gano, \$1.00.

Best collection of grapes, Isaac Orwick, \$1.00.

Best collection of pears, J. C. Evans, \$1.00.

Best collection of crabs, Isaac Orwick, \$1.00.

Best collection of plums, F. Holsinger, \$1.00.

Best plate of grapes, G. F. Espenlaub, 50 cents.

Best plate of apples, J. C. Evans, 50 cents.

Best box of plums, W. A. Gosnell, 50 cents.
Best box of blackberries, L. A. Goodman, 50 cents.
Best plate of pears, J. C. Evans, 50 cents.
Best plate of crabs, L. A. Goodman, 50 cents.
Best table bouquet, professional, L. A. Goodman, 50 cents.
Best hand bouquet, professional, L. A. Goodman, 50 cents.
Best vase bouquet, professional, L. A. Goodman, 50 cents.
Best vase, amateur, Ella Hopkins, 50 cents.
Best table, amateur, Mrs. Espenlaub, 50 cents.

As this communication is already getting too long, we will briefly refer to the part played by the society at the Kansas City Fair, and close.

The committee went to the grounds early Monday morning, the first day of the fair, and found everything in confusion, with no place to put our fruit, except the skeleton of a building which had just been commenced.

Our superintendent, Mr. Goodman, went to work with a will, and pushed things so rapidly, that by night, we had a building enclosed with canvass, and next morning were ready for business.

We were soon made aware of the fact, that we had strong opposition. Dr. Stayman, from Leavenworth, was on hand with a large collection of fruit, and flushed with his recent success at Bismark, bid fair to make it lively for us.

The Jefferson County Society, of Kansas, was also on hand with a fine display of fruit, and as fine a body of workers as we ever saw.

But notwithstanding all this opposition, the Missouri Valley was victorious, taking every premium offered by the association, clear to plates. When the boys of the Missouri Valley make up their minds to win, they are generally successful, as the societies of the states, in the great Mississippi Valley who have measured lances with us upon other fields, will bear ample testimony.

I cannot close this paper without alluding to a subject in which all horticulturists are interested. This subject is the inadequate amount offered in premiums in the horticultural department of our fair associations.

In Kansas, the premiums are very liberal, but they are generally limited in competition to their own state.

The premiums offered at Kansas City this year were so small, that none but a local society, with the gratuitous work of its members, even if successful, could more than come out even. Any

society from a distance who have to pay their expenses and transportation for their fruit, will come out in debt, even if they take first premium.

At the St. Louis Fair, which, perhaps, in all other respects is equal if not superior to any in the Union, the highest premium offered in the horticultural department was \$50.00. The consequence was, this department was almost a failure, and *Colman's Rural World* was forced to make a humiliating apology, and attribute it to anything but the right cause.

We suggest, therefore, that this question be brought before our various horticultural societies, and they use whatever influence they possess, to induce the managers of our fair associations to give more liberal premiums in the future.

G. W. HOPKINS, Secretary.

COUNTY REPORTS.

GREENE COUNTY.

SPRINGFIELD, Mo., Dec. 10th, 1883.

Missouri State Horticultural Society:

GENTLEMEN: Pursuant to a call in the *Rural World* of the 6th inst., we desire to submit a report from Greene county, for the present year, together with our horticultural "outlook." The natural adaptation of our county to horticulture, on account of soil, altitude, etc., is too well known to your body to require even a suggestion from us now on that point.

In reference to the fruit crop of this year our report must be brief, for this has been with us, as with many other parts of the State, an "off year." We think we approximate the apple crop in a guess of twenty thousand bushels. The quality was not first rate, and our best keepers are not keeping well. However, most, or nearly all, was marketed from the orchard, at seventy-five cents to one dollar per bushel at picking time. Such as dropped early, were sold at the evaporators for forty cents per bushel.

What we say of apples we might say of other fruits—light crop at good prices.

The short crop, added to the heavy damages done in most orchards by the November frost of two years ago, does not hinder or discourage our people. Tree planting goes on still, and is increasing. Bearing orchards begin to demonstrate to our farmers that it pays, and they plant. Men who had planted respectable orchards, now that the shipping facilities have so much improved by the Memphis and other new railroads, are adding largely,—some are planting forty to eighty acres of Ben Davis alone.

Our outlook is much improved by the recent building and operation of substantial evaporators at Springfield, and smaller ones at other points. This is quickening the demand for peaches and berries, so that these fruits will now be planted with liberal hands, with-

out fear of unsalable surplus. Already the demand for trees and plants for this purpose is above the stock on sale.

Nurserymen are looking to the point; they are budding to suit the evaporator and grafting to please the shipper—*Free Stone* peaches and *Ben Davis* apples.

Now gentlemen, we wish for you (and ourselves) a pleasant and profitable session, and should we live through '84, we hope to have for you a better report of a larger yield of all fruits.

We are very respectfully,

D. S. HOLMAN.

VERNON COUNTY HORTICULTURAL SOCIETY.

President, Judge Fuller, Nevada.

Vice-President, H. Ambrose, Nevada.

Treasurer, D. W. Graves, Nevada.

Recording Secretary, R. P. Benedict, Nevada.

Corresponding Secretary, Dr. E. R. Morerord, Schell City.

The following report was given by the Corresponding Secretary, Dr. E. R. Morerord:

This is the first time that our county has been regularly represented in the meetings of the State Horticultural Society.

Our county society was lately organized and has not as yet got into regular working order, but the presence of a number of our members at this meeting will give us a better insight as to what is needed and what is expected of us, and we shall hereafter be better prepared to do our share towards making the meetings of this society interesting as well as practically beneficial.

The fruit culture is rapidly on the increase in our county; nearly every farm has more or less orchard attached, while some are planting largely, and we have quite a number of orchards that are over 80 or 100 acres in extent. There is considerable attention paid to selecting such varieties as are best adapted to our soil and climate. By far the largest portion of the trees now growing in our county have not fruited as yet, from the fact that the most of them have been planted in the past four years. The inevitable ubiquitous tree man has been around and our county has been pretty well canvassed and they have been liberally patronized, and large deliveries of fruit trees are made every fall and spring at the principal shipping points in the county, as Nevada, Walker, Schell City, Ellis, Deerfield and

Clayton. The stock is furnished in part by foreign nurseries as well as from our home nurseries. The number of fruit trees at present growing in our county will probably reach as high as 375,000 bearing and not bearing, and probably from 6,000 to 6,500 acres is devoted to fruits.

We have four evaporators that came into operation the past season; one at Nevada, one at Walker, one at Virgil City and one at Montevallo, and as many more will be erected to be operated next season. From best information some 48,000 bushels of apples and over 4,000 bushels of peaches have been consumed by our evaporators and some twenty-five car loads or more have been shipped off. A good portion of fruit from the western part of our county is taken to Fort Scott, Kansas, from its proximity, and is not included in the above estimate.

The apple crop the past season did not amount to over a third of a crop, and did not attain its usual excellence. The varieties that have done best the past season, are the Ben Davis, the Rambo, Janet, and, in some localities, the White Winter Pearmain has done exceedingly well, and Wine Sap. Of the fall varieties the Maiden's Blush and Jonathan; summer varieties, the Early Harvest and Early Red June.

Apples for evaporation process generally sold from 30 to 45 cents a bushel, and for shipping from 50 cents to \$1.00 per bushel, being generally from 60 to 75 cents per bushel.

The following varieties have been recommended by our society for market purposes in our county:

Winter varieties—Ben Davis, Wine Sap and Missouri Pippin.

Fall varieties—The Jonathan and Maiden's Blush.

Summer varieties—Early Harvest and Early Red June.

Our peach crop was considerably under a medium crop. The early varieties done far better than the late, owing to drouth in the latter part of the season, just previous to the period of ripening. Plums sold from 75 cents to \$1.50 per bushel in our markets, owing to quality. Wild goose plums, full crop; did fine; sold generally about \$1.50 per bushel, part of the season at \$2.00 per bushel.

Strawberries did exceedingly well and sold readily at 20 cents per quart to supply home market.

Most everyone coming to our county from the Eastern States or from Ohio, Indiana and Illinois soon become convinced of the superiority of our fruits. A Vernon county horticultural society took the first premium at the great St. Louis Fair some years ago for the best display offered by any State or county society. Some of

our enthusiastic citizens that came from Illinois collected the fall specimens of forty-seven varieties of apples grown in our county and sent them to their old home at Aledo, Illinois, to their county fair, and the fruit men of that section did not and would not exhibit their fruit in competition with the Vernon county exhibit, giving their reasons that it was simply impossible for them to do so.

Our Society is known by the name of the Vernon County Horticultural Society and will accomplish much good towards educating the people to the wholesomeness of fruit as food and its great value as market products, and we hope it may prove a valuable auxiliary to our State Society in the future.

All of which is respectfully submitted.

E. W. MOREROD,

Cor. Sec'y Vernon County Horticultural Society.

CEDAR COUNTY.

VIRGIL CITY, Mo., Dec. 12th, 1883.

Apples for the present year were probably about one-third crop, owing to the year 1882 being an over abundant crop. Many varieties failed to set fruit buds for the present year. Prices obtained this year at the evaporators, were twenty-five to fifty cents per bushel. Prices obtained from shippers and grocerymen, from fifty to eighty cents per bushel.

Peaches one-half to three-fourth crop, prices obtained, twenty-five to one dollar fifty per bushel.

Grapes do as well as in any portion of the southwestern part of the State; though they are not much cultivated, except for family use.

Pears are not much grown, and are little profit on account of blight.

Plums, blackberries, raspberries, strawberries, etc., are as successfully grown as in any part of Southwest Missouri.

In this county, and particularly the western part, there is much interest taken in growing apples, and there are planted and now being planted, a large number of commercial orchards.

The fruit evaporators and the shipping demand, has created an unusual boom in the apple interest in this county, and I believe it to be only in its infancy, because for some years past we have every year furnished fruit for other sections of the country.

The planting interest at the present date, is probably two hundred per cent. greater than this time last year.

In Cedar county, and particularly the western part of the county, there are grand openings for all classes of men interested in fruit matters, and particularly for fruit evaporating companies; labor and fuel is cheap and plentiful.

Among the best bearing varieties the past summer; was the W. W. Pearmain, Jeneton, Jonathan, Ben Davis, Red Romanite, and Pennsylvania Redstreak.

The past summer, early peaches rotted on the trees very much. Some of the late varieties, such as Smock and Heath Cling, did better.

Raspberries did well, such as Mammoth Cluster and Gregg. So far as I can learn, the red varieties are not very profitable.

Respectfully submitted for your consideration, by

E. LISTON.

HENRY COUNTY.

To the Missouri State Horticultural Society:

CLINTON, Mo., December 5th, 1883.

OFFICERS AND MEMBERS: In compliance with your circular received, that delegates are earnestly desired from every county in the State, whether organized or not, and bring in a written fruit report: Henry county has no organized horticultural society. As I am a member of the State Horticultural Society, and a fruit grower in Henry county, I am interested. I take the liberty upon myself to make a report of the fruit interest in my county. To the best of my knowledge, I don't know why our county has no such society, she certainly needs one as far as I can learn. There are orchards all over it, and it can be counted among one of the leading fruit counties, which I will endeavor to show in this report. Our county can boast of as good and perfect fruit, in size and quality, in fact fruit I might say of nearly all kinds grows to perfection—as our soil is adapted to nearly all kinds of fruit, being of many varieties, from a black limestone soil to a deep sandy loam soil. The largest apple I ever saw, grew on timber, sandy with clay sub-soil. It was of the Folowater variety and weighed, seven days after being picked, thirty-three and one-half ounces. It was sent to Fink & Nasy, St. Louis, and they put it on exhibition on the Exchange—and wrote a letter back to the sender. A. P. Froweine, cashier of Henry County Bank, speaking of its enormous size and weight. It will be plainly

seen why such apples grow on the prairie timber belts. Rivers and streams mingled all over them making them good for fruits. Nearly all farmers have planted more or less fruit trees of late years, which are just coming into bearing. The old orchards which are principally of seedlings, bear bountiful crops yet. Farmers owning young bearing orchards are just lately realizing what a source of profit an orchard is—evaporators and shippers have done well, especially this year. Everything was in readiness to begin early, and save all the early and windfall by evaporation; and you will see by the amount evaporated in this county, what ready money it made to the orchardist; otherwise it would have been wasted, except the best of it. Many car loads, or thousands of bushels, were shipped at good prices. The crop was enormous last year, and those that tried to dispose of it made money. Many followed suit this year, to dispose of their fruit, and have done well. This year's crop was about forty-five per cent. of last year's crop—last year's crop was estimated thirty per cent. above an average. Taking one hundred as its base, last year's crop was not all saved; but this year's crop, as a general thing, was saved, and made more money to the grower than last year, as a general thing.

I am already running into details more than I intended. As near as I could collect amounts of fruit handled at the different points on the M., K. & T. R. R., I will give in bushels and car loads; the amount of fruit raised in this county, and in the way disposed of, by evaporation, shipped and on hand, then you can see how Henry county stands on fruit. There was evaporated at the several points: Clinton, 54,000 pounds; Montrose, 20,000; Lardo, 20,000; Windsor, 60,000; Brownington, 4,000; Clinton, (cores and peelings,) 10,000; total, 168,000 pounds. For this amount of evaporated fruit, it would be safely to say by the figures, that it took 28,000 bushels of apples, at an average cost of 30 cents per bushel are \$8,400.00; this was ready money to fruit-growers, by having evaporators in operation to take this class of fruit that would have gone to waste as heretofore. Evaporated fruit is not all sold yet. The price it has brought can safely be put at an average price of 13½ cents per pound, and 168,000 pounds would amount to \$22,680.00; you may readily see what money was saved by evaporation. You may wish to know what kind of evaporators were in use, as you all are interested: Williams patent, 4 machines in operation; Plummer patent, 3 in operation; American Manufacturing Co. patent evaporator, 8. I state again, if this new mode of drying had not been introduced in this county, it surely would have been nearly a

total waste. as we are so situated that we cannot easily dispose of that kind of fruit. There has been considerable shipping done at the several points on the line of railroad, which amounted to 63 car loads, or about 25,200 bushels; on hand, 4,400, total, 29,600 bushels, at an average price of 40 cents per bushel, amounting to \$14,800.00. You will see that the evaporated fruit brought more money direct in the county (as all parties live in the county) than the shipped fruit did, as most parties that handled the other lived off at a distance.

Varieties of apples which are most productive, are: Ben Davis, Winesap, Janeton, Mo. Pippin, Huntsman's Favorite, Willow Twig, Timber Twig, large and small Romanite, Maiden Blush, Rambo, Red Astrachan, Red June, Keswick Codlin, Early Harvest: Duches of Oldenburg, A. M. S. Pearmain, Winesap, Benoni, and a good many other varieties, owing to soil and location. Even Yellow Belleflower, R. I. Greening and Baldwin do pretty well on timber soil.

Pears are not a success as other fruits, yet many bushels are grown: Bartlett, Clapp's Favorite, Duchess, etc.

Peaches as a general thing, do well, and seldom fail; nearly all varieties do well, generally: Heath Cling, Crawford's Late and Early; Honest John, Stump the World, Smock, Stealthy, Amsdon, Beatrice, Alexandria, and others.

Plums—Wild Goose and Minor are best as good growers and bearers.

Cherries—Carmon Morilo, Early Richmond.

Grapes—The crop was good this year, especially the Concord, which never fails, and gives good satisfaction.

Small fruits, when planted, as a general thing, grow and produce good crops; blackberries, raspberries, gooseberries, strawberries, etc. As to currants, I can't say much, but think do not do well to raise for market.

Condition of the orchards, pretty good; it is true many have been neglected by letting the round head borers destroy some of the apple trees. The wood growth was good this season, and all fruit trees are well supplied with well matured fruit buds to bring forth a good crop next year if nothing interrupts.

Yours,

J. M. PRETZINGER.

Missouri State Horticultural Society.

RESUME OF PROCEEDINGS.

REPORTS OF COMMITTEES.

The Committee on Wines made the following report:

MR. PRESIDENT: We, your Committee on Wines, beg leave to report as follows:

That wines and fermented liquors of all kinds having a tendency to lead to drunkenness by educating a taste or appetite for strong drink, we believe that they have no place or part in a horticultural exhibit of this kind, and we would recommend that this Society refuse wines for exhibition at all future meetings.

We find eight samples from Rommel & Sobbe, of Morrison, Mo., and two samples from Talconia Vineyards, Napo, Cal., but do not choose to make any report as to the merits of the same.

MRS. E. A. DAMON,
MRS. F. A. FORBES,
BENNETT HALL,
J. K. GLASSFORD,
A. W. ST. JOHN,

Committee.

Moved that the report be received. Carried.

Moved that the report be adopted. Carried.

The chair announced the following committee on final resolutions: W. G. Gano, A. Ingraham, A. Goslin.

Also the following persons to assist the Secretary to make selections of fruits from the tables; the same to be shown by the State Society at the coming Mississippi Valley Horticultural Society, meeting held at Kansas City, January 22d to 25th, 1884; G. F. Espenlaub, C. A. Emry, J. A. Durkes.

Meeting adjourned to 7 P. M.

THURSDAY EVENING.

The chairman being absent the meeting was called to order by the Vice-President elect, A. W. St. John.

The following amendments were made to the constitution :

Article II amended by adding: " All ladies may become annual members by giving their names to the Secretary as soon after each regular annual meeting as possible."

Article VI, the following standing committees shall be appointed by the President for the year; and they shall be required to make as complete a report as possible in writing under their respective heads at the annual and semi-annual meetings of the Society of what transpires during the year, of interest to the Society;

Orchards,	Vineyards,
Small fruits,	Ornamentals,
Botany,	Nomenclature,
New fruits,	Entymology and Ornithology.

REPORT OF COMMITTEE ON NEW FRUITS.

Your committee find on the tables fine varieties of apples by Mr. Gano, of Platte county, supposed to be seedlings, and unnumbered 1 to 5.

No. 1. Size, above medium; slightly oblong, varying to roundish ovate; color, beautiful bright carmine to dark red; stem, medium in size and length, set in a deep cavity surrounded by a greenish russet calix, closed or partly open in a medium basin; flesh white, tender, medium juicy, mild, sub-acid; core and seed large; skin thick; quality good to very good; season, early winter; well worthy of trial.

No. 2 not worthy of cultivation.

No. 3. Size, medium; shape roundish oblate; stem, large, short set, in a medium cavity; color, dark, dull red, indistinctly striped; calix, open in a shallow basin; flesh, yellow, firm, sub-acid, resembling limber twig; worthy of trial; quality, good; season, December to February.

No. 4. About medium in size; roundish, slightly conical; stem, small and short, in a shallow cavity; calix small, in a very shallow basin; color, dull red, and a yellow russet ground; surface profusely sprinkled with brown dots; flesh, light yellow; quality good, about

as willow twig; not ripe enough to determine, but we consider it worthy of trial.

No. 5, is a medium sized red striped apple, resembling Jeniton and Smith's Cider, possessing no particular merit.

We find also on the table a fine plate of York Imperial from Maj. F. Halsinger, of Rosedale, Kansas, an old variety, but new in the west, and considered worthy of cultivation. Also, from the same, a plate of small apples called Shanee, and known as an enormous yearly bearer and long keeper.

We find a plate by Mr. Griffith, of Carthage, said to be a seedling of the Jeniton; about size of its parent; color, beautiful bright, red striped; flesh, white; very juicy, mild sub-acid; worthy of trial.

Also a plate by Mr. Hornback, of Jasper county, a seedling raised on the farm of Mrs. Gibson some fifty years ago, and propagated locally to a limited extent, said to be a regular and profuse bearer and a fair keeper; quality good until too ripe.

ON FRUITS ON THE TABLES.

Your committee beg leave to report as follows:

W. C. Downs, 5 varieties of apples.

J. K. Glassford, 14 varieties of apples.

John Hornback, 4 varieties of apples.

Powell Jackson, 4 varieties of apples.

Franklin Griffith, 8 varieties of apples.

Bennett Hall, 5 varieties of apples.

Brown & Hall, 5 varieties of apples.

Jonathan Hodson, 8 varieties of apples; also some very fine Minkler apples.

E. C. Teas, 4 varieties of apples; 2 varieties of pears; 1 variety of quince.

W. J. Seiber, 4 varieties of apples.

Powell Jackson, 4 varieties of apples; 14 varieties small fruits in bottles. Varieties in glass: Peaches—Cooper's Mammoth; Pears—Keeffer's H. and Clapp's Favorite; Cherry—Empress Eugenie; Quince—Orange; Gooseberries—Downing; Raspberry—Cuthbert; Currants—Fay's Prolific; Strawberries—Crescent, Lazy Fellow.

All the above are of Jasper county.

Missouri Valley Horticultural Society, 61 varieties of apples.

Henry Shepley, Vernon county, 5 varieties of apples.

J. A. Durkee, Platte county, 7 varieties of apples; 3 varieties of pears.

P. Wakefield, also of Jasper county, 5 varieties of apples; noticeable some fine Rome Beauty.

E. Liston, Cedar county, 5 varieties of apples.

George Hall, of Lexington, 4 varieties of apples.

A. Goshin, Holt County Horticultural Society, 35 varieties of apples.

J. B. Stockton, Greene county, 10 varieties of apples.

S. J. Hazeltine, Greene county, 2 varieties of apples.

D. S. Holman, Greene county, 4 varieties of apples.

James Kirkgraber, Greene county, 4 varieties of apples.

All of which is respectfully submitted.

JOHN S. HAZELTINE,
BENNETT HALL,
G. F. ESPENLAUB,
Committee.

ON RESOLUTIONS.

The committee reported as follows:

Resolved, 1st. That the Missouri State Horticultural Society return their cordial and sincere thanks to the Jasper County Horticultural Society for their kindness and hospitality extended to us during this session.

2d. We also return our thanks to the citizens of Carthage for their warm welcome and liberal hospitality extended to the members of this society, and for their presence during our deliberations.

3d. That our thanks are due and cordially extended to our worthy chairman, Mr. C. W. Murtfeldt, for the fair and impartial manner in which he has presided over the deliberations of this meeting.

A. GOSLIN,
HENRY SHEPLEY,
W. G. GANO,
Committee.

The place of the meeting of the society for its next annual meeting was taken up, and a very pressing invitation was given by the Vernon County Horticultural Society to hold the next meeting at Nevada. But upon discussion, it was thought best to leave the matter with the executive committee, although the committee were anxious to come to south-west Missouri again, as here was found more interest in the matter of horticulture than in most parts of the state.

Mr. J. C. Evans asks this society to take some action on the

size of the apple barrel. It varies from two and a half bushels to three bushels, and it causes much trouble; thinks if we adopt the size, two and three-fourths as the standard, and work to that end, it will not be long before we get it.

The following is the resolution:

Resolved, That this state society adopt as the standard size of the apple barrel, one that will hold two and three-fourths bushels when pressed in according to the usual custom.

Resolved, that every member use his best endeavors to have this as a standard in his locality.

Resolved, That the secretary be requested to, present this matter to the next Legislature, with a request for adopting a regular size for the apple barrel.

The barrels now used are mostly made of old flour barrel staves, and hold fully three bushels each. The fact, that we get no more for them than others do for two and three-fourths bushels, does not seem to us fair or just, and we desire one uniform size, that we may all stand an equal chance with other states and places.

The secretary then requested instances of the amount of money that apple or peach orchards had produced per acre, and instances were given as follows:

10 acres paid \$50.00 per acre.

12 acres paid \$100.00 per acre.

8 acres paid \$150.00 per acre.

Jonathan paid \$200.00 per acre.

Ben Davis paid \$175.00 per acre.

Others were given, ranging from \$50.00 to \$300.00.

THE PEACH

Was taken up and discussed.

Mr. Glassford thought that for Amsden peaches the ground should be underdrained; they are so apt to rot. It is one of the most profitable, if they do not rot. Salaway is one of the most profitable of all. Best land for peach is high and dry, rocky soil. On some of the land they do not do well. But there are many choice locations for the peach orchards. Crawford Late and Old Mixon are very fine here. In Henry county all kinds do well. Steadly are very fine in rich soil.

Dr. Morerord. The Italian is a new peach originated here and is very fine and large. Best for drying; rich and sweet. Chinese Cling and Heath Cling are of the best.

Mr. Espenlaub. All early peaches should be put on poor soil

and dry land ; the later may go on richer land. Does not like cling stone peaches for money ; freestones pay the best and sell easier.

Dr. Goslin thought Hale's Early one of the best for the northern part of the State. Likes Amsden, Troth's, Crawford Early, Crawford Late, York and Smock.

Mr. Amsden has his ground thoroughly underdrained and yet he is compelled to plant closely and has the ground set in grass to prevent rot. The high bluff land, red soil, is best for the peach.

Mr. John Wampler has the largest orchard of peaches in Southwest Missouri and those planted the thickest do the best.

It being time for adjournment, the Vice-President elect, A. W. St. John, in a few chosen words, expressed his satisfaction at the results of the meeting, the pleasure of becoming acquainted with each other and the general enthusiasm this meeting had produced.

Treasurer Evans answered that the members had never had a more pleasant and enjoyable meeting and thought this had been of mutual benefit and that it would be our good pleasure to meet together many times as a State Society.

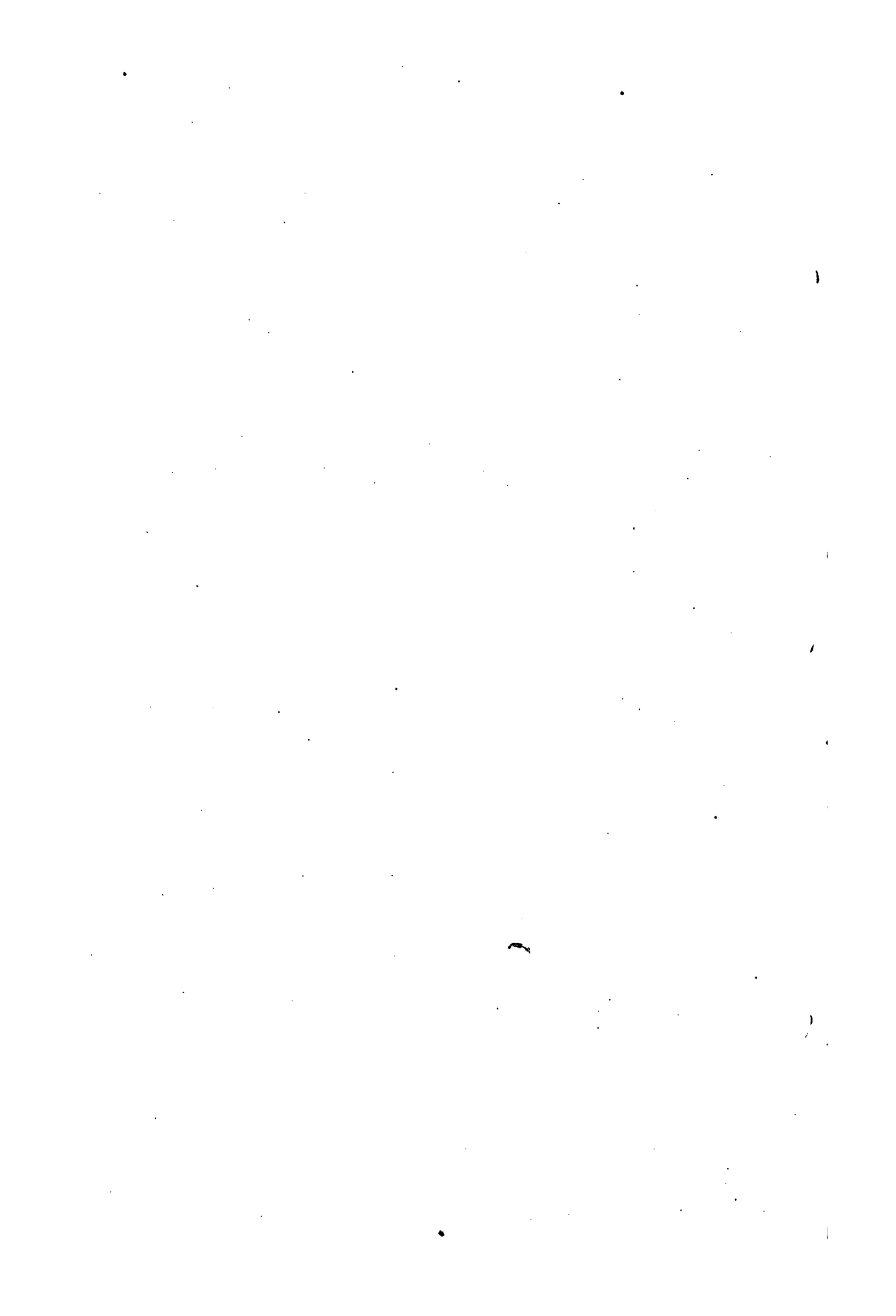
The Secretary expressed his satisfaction at the way this meeting had progressed, in spite of the absence of our President and Vice-President ; that we were glad to get some new blood at work in this cause ; that here he had found many earnest and enthusiastic horticulturists ; that the time was coming when we, as a State Society, should take the place we should occupy among the States if we were but of one mind in this cause ; that he had found many friends here and that this had been one of the best meetings for years.

All of which is respectfully submitted.

L. A. GOODMAN, Secretary.

SECRETARY'S BUDGET.

BEING A COLLECTION OF CLIPPINGS FROM VARIOUS
SOURCES WITH NOTES AND OBSERVATIONS.



SECRETARY'S BUDGET.

The Secretary is indebted to such papers as *Gardener's Monthly*, *Country Gentleman*, *Colman's Rural World*, *Prairie Farmer*, *Kansas Farmer*, *Purdy's Fruit Recorder*, *American Agriculturist*, and *Rural New Yorker*.

L. A. GOODMAN, Secretary.

The subjects are arranged under the following heads:

Orchards.	Vineyards.
Small Fruits.	Peaches.
Flowers.	Vegetables.
Marketing.	Ornamentals.
Forestry.	Insects.
Birds.	Scientific.
Cider.	Miscellaneous.
Receipts for Use.	

A few reports of the Missouri Valley Horticultural Society.

ORCHARDS.

A member of the Warsaw, Ill., Horticultural Society, Mr. Stewart, says he has had an annual crop of apples for fifteen successive years, a pleasing fact, due in some measure he thinks to his management. He cultivates so as to make the tree grow as rapidly as possible until of bearing age, after which he cultivates little, but keeps the sod down by mulching.

Never prune a tree, or at least never remove large branches after the first warm day of spring, and before the foliage is of full size. Large branches, if cut away at that period, will be sure to "bleed" more or less during the summer, causing an unsightly blackening below the wound, and occasioning the decay of the heart-wood from the incision downward, sometimes even causing the premature decrepitude and death of the tree.

AMERICAN APPLES IN ENGLAND.

The *Garden* says: The prospects were never more favorable for shipments from America to England than they are this year. The American apple trade, formerly monopolized by Liverpool, has during the last few years (in consequence of direct steam communication,) been gradually diverted to London, which market now competes favorably with that of Liverpool.

YORK IMPERIAL APPLE.

When a fruit once becomes widely scattered it achieves popular favor, simply because people know no better. In the olden time, it was the fashion to take votes at Pomological meetings as to the best varieties, and hundreds of people voted on the best they knew. No new and superior variety could get votes in this way. To-day there would be many votes on apples that would not include the "York Imperial," but the vote would only prove that it takes time for superior varieties to become well known.

APPLE TREES SPLITTING.

Various devices or remedies are given in the papers from time to time, to prevent forked apple trees from splitting. Iron bolts are inserted; iron bands are employed; ropes are used to draw the parts together; branches are drawn together and interlaced, etc. Prevention is best, and well-formed heads will not split down. Two main branches, diverging from each other at an acute angle, should not be permitted. An even and spreading head will not split, nor will any tree be liable to injury if not allowed to overbear. The practice of propping up the limbs of fruit trees indicates that the trees are not well trained, or that they are allowed to overbear, or both.

PRUNING.

"Too much pruning is worse than no pruning. When will farmers learn to commence pruning their trees when first planted, and prune a little every year—just enough to give them proper shape—and enough each year to keep them in shape, and no more, and not neglect them for years, to care for themselves through hardship and grief, till finally, impatient that the trees do not bear, they come to the conclusion that something must be done, and so go into them with ax and saw, and butcher them to death."

FRUIT ON THE FARM.

Fruit, which is such a necessity for mankind, is often neglected. Orchards and berry patches are often not cultivated, not pruned, not manured. Old orchards go to ruin; new ones are not set, and the first thing one knows, he has to buy his fruit. Some will say that it is no use to set out orchards, because of the severe winters. But there are varieties that will stand our climate. Set out in sheltered places, and do not be afraid to cultivate and trim. Buy trees of a reliable nurseryman, and before the trees come, have the ground prepared; do not dig a small hole and merely stick in the trees, like fence posts. Nine times out of ten, trees do not live because they do not have proper care. Prune young trees back; cut off bruised roots, and if it happens to be a dry season, water them during the hot months.

In planting an orchard of 500 trees, I would lay out my ground by plowing furrows 25 feet square, drive by stakes, then let the near horse come back in the furrow. By this method very little digging will have to be done. Then have loose surface earth around the

tree, covering the roots nicely and firmly, and so on until all the trees are planted; then with a small plow and one horse you can throw the earth nicely around the tree, and your trees will be nicely planted, and if you can keep your trees in good order every one will grow.

CULTIVATE THE ORCHARD.

There are few cases in which thorough, judicious culture pays better than in the orchard. We have in mind two apple orchards planted side by side at the same time and upon similar soil. In one the trees were set thirty-three feet apart each way; in the other twenty. The former was plowed and manured frequently, until the trees were well in bearing; it was trimmed yearly, and when the trees began to shade most of the ground, the orchard was treated every odd, light-bearing year to a heavy mulching of straw and finely chopped trimmings from the trees themselves. The other orchard was neglected; if it was cropped, there was little or no manure applied. The trees were not washed, and insects were not fought.

A few years ago an average Northern Spy tree in each orchard, just across the fence from each other, was measured, and their general thriftiness compared. The tree in the neglected orchard had a top fourteen feet in diameter and a trunk nineteen inches in circumference. The apples it bore were few, wormy and knotty, hardly worth the gathering. In the other orchard the tree had a top twenty-two feet in diameter, and a trunk twenty-seven inches in circumference. It regularly bore several barrels of number one apples, which never failed to bring the very highest market price. The smaller tree had a sickly aspect, yellow leaves, and a trunk scarred by borers; the other was a marvel of thriftiness, with a clean, straight, handsome trunk. Both the trees had at this time been set seventeen years.

That which is true of the instance in question, is true wherever a poorly cultivated tree is contrasted with a well cultivated specimen. Now that apples are being gathered, let the interested farmer notice the differences in yield in orchards under different states of cultivation, for "by their fruits ye shall know them."—*American Cultivator*.

PRUNING APPLE TREES.

An eastern paper discussing apple tree pruning, thinks that the main object ought to be to trim in that season of the year when the

wound will entirely heal over, or the tree is ruined sooner or later. If that object is not accomplished, the water enters and a hole is rotted into the trunk; it becomes hollow and is destroyed.

Some trim early in the spring; the sap forces itself out of the wound in abundance, runs down on the body or larger limbs; the bark turns black and often dies, and the trees are permanently injured. Another follows the opposite extreme and prunes in August or even in early winter, when the sap has turned into the wood; the wound does not turn black, as in the other case, but heals slowly, if at all, and a tree with holes in it is a final result. If the bark is entirely peeled off the tree from the roots to the limbs, in the longest days of midsummer, which are somewhere from the 15th to the 26th of June, a new bark is formed and the tree is not injured, and an old tree is said to be benefited by the operation. If apple trees are pruned at this time, if any bark is accidentally taken off, where the limb has been removed; it will entirely heal over, if the limb removed is not too large, and the growth is sufficient for that purpose. The sap of the tree is not too thin to run out and blacken the tree, as in early spring, nor too thick and already formed into the wood, and the wound comparatively dry; both wood and bark as in latter pruning, are not stopped in farther growth over the wound. Many farmers, as a general thing, prune an orchard without discretion, sawing off too large limbs, that can never heal over, oftentimes cutting them off some inches from the trunk of the tree, or the larger limbs from which they are removed; the stub of the limb will die to the body and the further decay of the tree is sure.

In pruning off too much, the natural equilibrium between the roots and the top is destroyed, and the body of the tree will come out in suckers or sprouts. Such ignorant pruners had better cut their trees down and trim them afterwards, which is easier done, and with more profit to themselves, as the ground could be employed for some better purpose. If a limb is dead there is no option; it must be cut off close to the tree; the only living limbs that should be cut off are the small ones that will heal over, coming from the larger branches in the inside of the top (and those that cross and gall each other,) thereby letting in more sun to the apples to give them a better color and give the picker a better chance in the tree. Everything beyond this is superfluous, and pruning had better be dispensed with altogether. Many fine orchards receive their death warrants from such ill pruning every year.

DIGGING HOLES.

It was formerly recommended to dig wide holes. This practice answered well for a limited number of trees, where the soil was hard and had not been loosened. It gave a good chance for the roots of the young trees to extend as far as the limits of the bed of mellow earth occupying the holes. We have known trees of some tardy-bearing sorts made very productive in this way, the trees growing rapidly while the roots were confined to the holes, and the check given to them as the roots reached the hard earth beyond threw them into abundant productiveness. But for extensive market orchards, planted with productive sorts, as for instance the Baldwin at the east, or the Ben Davis at the west, it is sufficient if holes are dug large enough to receive all the roots without bending, and to depend for sufficient growth on good cultivation while they are young, and an annual or biennial top-dressing with yard manure after they come into bearing.

THE APPLE TREE BORER.

When permitted to have its own way, this is a very destructive enemy to the young apple orchard, but fortunately can be prevented from doing injury by a very little labor, if it be properly directed and performed at the right time.

Those who have kept the trunk of their trees protected during the summer with a mound of coarse sand, or a covering of paper, should not neglect to remove the protection before cold weather sets in, and carefully examine the trees to make sure that no worms have hatched out. If the trees had been examined in September, as they should have been, whatever worms have been able to avoid the protection would have been very small, not much more than 1-4 of an inch in length, and so near the surface of the bark that by scraping with a knife his lodging place could have readily been discovered, and the worm destroyed, but if the work of examination has been delayed until the last of October, the worm will have increased very much in size, and have eaten his way down from four to six inches from where the egg was hatched; as the worm proceeds downwards he will penetrate the bark nearer the wood, so that by the first of November he may be found between the inner bark and the wood of the tree. A worm that has advanced to this stage has caused a permanent injury to the tree, by making a defect which furnishes one of the best places for depositing the eggs for another generation.

The miller rarely ever deposits an egg on a smooth surface, but almost invariably selects some defection, and if a wound so much the better; in such places the eggs are protected before they hatch, the little worms when hatched find a moist place to start life in; this is important, for if they should hatch out on a hard, smooth surface, they would find it very difficult to eat their first breakfast, especially if they should chance to commence life during dry weather.

One of the secrets of keeping borers from an orchard is to keep the trunk of the tree protected during May, June, July and August, up to a point where the trunk of the tree is smooth, but no protection should be fully relied on; the tree should be carefully examined twice a year; first in May, when the protection should be placed around the tree, and in autumn, when the protection is removed.

THE BEARING YEAR.

There seems to be a great desire manifested to solve the mysteries of the bearing year. The fact is, nothing can be more easy to explain and understand. A tree, like an individual, cannot do everything at once. It cannot produce wood and fruit buds at the same time. When it is young it expends its energies in making wood, and when it bears a full crop of fruit it does not grow. When a young tree produces a little fruit its growth is effectually checked, and it is better to pick the buds off, as the growth is worth more than the fruit. When a tree bears a heavy crop it makes neither wood nor fruit buds for the next season, but uses all its energies to develop its crop without any regard for the future; the consequence is the failure of the next year's crop. The next season the tree has no fruit to mature and it develops an abundance of fruit buds. Again, the next year the tree bears abundantly and thus is established the habit of bearing every other year. Now, if the tree only bears a partial crop any one season, it will also develop fruit buds for the next and thus bear each year. If during the bearing year the blossoms are killed by frost, the tree then having no fruit to mature will produce a full supply of fruit buds, and unless some accident prevents, will produce a full crop of fruit, and thus the bearing year becomes changed.

One of my neighbors had his orchard stripped of its leaves by the canker worm. It bore no fruit that year, which was the bearing year, but it bore a large crop the next, and thus the bearing year was permanently changed. Whatever the previous habit of the tree on which the fruit failed last season, we have reason to expect a full crop the coming year, unless some accident prevents, and where the

crop is large we need not expect a crop the next year. One person took cions from a tree that bore on the "even" year and was surprised that the young trees bore on the "odd" year; another took cions from a tree that bore on the "odd" year and found the young trees bore the "even" year; hence the inference that grafting changed the bearing year. The fact is, the bearing year of the parent tree has no influence whatever on that of the young tree. It produces wood or fruit or fruit buds according to circumstances without any regard to the habit of its parent. Whoever will take the trouble to pick all the fruit from a tree early in the season will be likely to find that tree producing a large crop the next year.

SOME NEW PEARS.

We glean from the *Pacific Rural Press* that there are three new pears soon to be offered to the public, all raised in California by the late B. S. Fox from seed of the Belle Lucrative. One is called P. Barry. It is of a golden russet color, and in season (Cal.) from the middle of December to February. The second is named Col. Wilder, a fine yellow in color, and in season from January to May. The third is named B. S. Fox, of a cinamon yellow, ripening from October to November. All are said to be of good quality.

WHY ARE APPLE TREES SO SHORT LIVED IN THE WEST?

The wording of this question presupposes the longevity of the apple tree to be greater in other localities than it is at the West, and in discussing the matter members generally held to the idea that down East and in many localities far north of us, the apple tree lived and produced profitably for them 50 to 100 years. But this knowledge with me, at least, being only hearsay knowledge, and wishing further confirmation of its truthfulness, I addressed notes of inquiry to some of the leading horticulturists and fruit growers of the Eastern States, asking how many years their apple orchards remained healthy and in good bearing condition, and why our trees in the West died so young.

In reply to my inquiry, John A. Warder says: "You have indeed asked a hard question, and one which involves several answers, or a complicated one. There have been many answers offered, some of which are unsatisfactory, root-grafting especially so. We pomologists, with our refined tastes and commercial ideas, have selected only those fittest for our object (of having choice table fruit) regardless of sturdy trees which do not always go together, or of having trees that bear abundantly and are over productive, and

which are early bearers, both of which qualities being adverse to thrifty and often to hardy tree growth, at least liable to be in opposition to such growth, though not always so. Climate also has much to do in the matter. The prairie country especially is often very trying to perennial vegetation in its drying winds and in its sudden changes. The wind break is essential as a means of protection. The soil has been blamed, but though some soils are better for trees than others, and we even select certain soils as best for certain varieties of apples, all our blessed land has in it the necessary elements of growth. The old orchards seldom reach fifty years here, and are then decimated, and the trees diseased and unproductive, as a rule, though there are exceptions. I have trees, set twenty and twenty-five years, that have never yet borne me a fair crop, but they will now produce abundantly for the next twenty years, and some mayhap still longer. Close planting is your salvation in the prairie country, if you thin out as the space is needed, but cover the ground."

From Thomas Meehan I received the following reply through the *Gardener's Monthly*: "There is little doubt that the average life of an apple tree in Pennsylvania, is about fifty years. The length of life in any tree depends upon its vital power. Anything that affects the vital power of a plant affects the longevity. A tree that has to struggle with high winds and a low temperature, will not live nearly as long as the same kind of tree protected from these trying circumstances. In like manner one subjected to very dry or very wet influences or anything that is not very favorable to vegetation, will not live as long as one which has everything favorable about it. Thus we see that all the hypotheses named by our correspondent may have an influence so far as they bear on this question of vital power—climate, soil and management—all relate to the question. We could make trees live as long in Illinois as anywhere else, but it would probably be at the expense of something we prize. What we call culture is opposed to abstract laws of health in plants."

Ellwanger & Barry answer in this wise: "The reason why apple orchards at the West are short-lived is, that they grow fast and do not ripen their wood well. The consequence is injury in winter, and this followed up year after year destroys vitality, the center is all black and dead, with a living shell outside, which a hard winter kills. In the Eastern States, where the apple is long-lived, the soil and climate are very different from yours. All you can do is to select hardy sorts and plant on dry land. There are orchards more

than fifty years old, yes, eighty to one hundred years old in good condition in this country."

TOO MUCH CULTINATION FOR FRUIT TREES.

Some orchards get too much culture after they are three or four years old. Under that age it is hardly probable that they will be injured by any amount of careful cultivation, for the roots have not yet worked up to the surface, where they can be injured. But as soon as we begin to interfere with the surface roots, the tree, in self-defense, begins to send its rootlets downward into the cold, sour soil, and the wonder will be why the trees are so backward about leaving out and blossoming; and why, when pains have been taken to cultivate the trees, they should be so unfruitful. Can anything be more fruitful than those walnut trees, or those wild plum trees in the woods yonder? They have never been cultivated, yet they are never grass-bound. If one digs down at the foot of these trees, he will find several inches of the finest mould, and it is not drawn away as soon as the snow goes off in the spring. Each autumn adds another layer of leaves to the rich mould. Now our fruit trees are mostly deprived of this natural enrichment and protection, when set in an open field, where the wind can have free access to sweep away the leaves. We should give them an equivalent in some form, to protect the roots in summer as well as in winter. This may be several inches of leaf-mould from the woods, or a similar covering of half-rotted straw.

The pruning of fruit trees should have prompt attention. Apple or pear seldom need more than a thinning out of the weak branches, except when the growth is weak from insects' attacks, over-bearing, or poverty, or bad management. Shortening in, so as to get a new, vigorous growth, will then be a benefit. Just how much pruning should be done, cannot be told outside of the orchard to be pruned. In the old times, we had pictures and written sketches of just how to prune a tree, which no one could follow, because no two orchards will bear just the same treatment. The grape can be brought nearer a general rule—but, even here, little more can be said than that we do not want to retain weak shoots, and we do not want the strong ones—we do not want the whole length of the cane which we preserve, but we shorten in proportion to its strength; we want always to keep our annual shoot as near the ground, or as near the main stem, as possible, and, therefore, in pruning, we study to so cut as to give the lowest ones all the encouragement we consistently can, keeping in view our desire to get a full crop of fruit the coming season.

RUSSIAN APPLES.

We have received from Ellwanger & Barry specimens of the two popular Russian apples, the *Arabskoe* and the *Titovka*. The *Arabskoe*, as described by Chas. Gibb, in his notes on Russian apples, and as seen in these specimens, is rather large, nearly round apple of a dark purplish red, and with a light bloom, with a general cast like the Blue Pearmain. It is acid, solid, rather fine grained, and has the reputation of keeping two years. Mr. Gibbs says it is one of the most profitable apples in Russia, and that he visited an orchard at Saratof-on-the-Volga, (latitude 52 degrees), containing 12,000 trees, where a week or two before 300 pickers and 85 packers were employed in shipping the apples to Moscow. The winters at Saratof are about the same as at Quebec, but we are told the mercury there sometimes becomes solid.

The other apple received from Ellwanger & Barry is the *Titovka*. It is above medium in size, nearly round, regular, distinctly striped dull red; the flesh rather coarse but tender, with a mild, sub-acid, good flavor, and would be called second-rate or quite moderate in quality. It appeared to be fully ripe in the latter part of August. The tree is said to thrive in the severest climates. The specimen figured by Mr. Gibb is oblong, but a difference in climate and other external influences, may have changed the form from oblong to nearly round. He remarks that this apple is rather better than Duchess of Oldenburg, because less acid. We should place them about on the same level. But although neither of these nor any other Russian apples are nearly up to our best standard sorts, they may have another strong recommendation besides their extreme hardiness and adaptation to our coldest northern regions, in their productiveness. The present season when orchards all through the country were so destitute, Ellwanger & Barry inform us that all the Russian varieties were bearing quite profusely, in strong contrast with other sorts. Cultivators of fruit generally, while they may desire delicious quality, would prefer a supply of those of second quality to none at all. Messrs. E. & B. have given much attention to testing the Russian varieties, and they regard the *Titovka* as one of the most valuable they have tried.

GIRDLING.

The fact that girdling trees would promote fruitfulness was known to the ancients, having been discovered probably by accident. At different periods in the world's history the theory has been re-

vived, but we think it has never been prosecuted on a large scale for a long time. Why it has not we are unable to say, but suspect that frequent repetitions of girdling tends to impair the vitality of the tree. Fifteen years since, finding a crooked barren tree out of the rows, and being determined to sacrifice it, we, in the month of June, stripped the bark from the entire trunk, to test ourselves the theory that such a process would not kill the tree. The tree, instead of dying, bore the next year a full crop of fine. Swaar apples, and continued a very productive tree for years, until, having satisfied ourselves, we removed it.

Several years since, Mr. Spaulding, an extensive orchardist of Illinois, commenced girdling a large apple orchard, with the effect, as reported, of throwing it into fruiting. For the last two or three years we have heard nothing about it, whether he continued his experiments or abandoned them, and whether it proved ultimately detrimental to the trees, or otherwise, we have not learned.

As to the cause of fruitfulness, or rather, how the girdling operates to promote fruitfulness, the theory is: When vegetable growth is very rapid the energies of the plant are extended in promoting growth of plant; leaf-buds are formed instead of fruit-buds. When, from any cause, the rapid growth is checked, fruit-buds are formed in the face of a portion of the leaf-buds. The reason why girdling causes the formation of fruit-buds is because it interrupts the free flow of sap and thus checks the rapid growth of wood, and fruit-buds instead of leaf-buds are formed.

DO WE PRUNE TOO SEVERELY?

Those not practically educated in the details of fruit culture imagine that one of the great essentials to the promotion of thrifty trees and perfect fruit is the reduction of the branches by severe pruning annually. Evidences of the reverse of everything that is ornamental and fruitful are seen in orchards where the wisdom of the pruner is measured by the amount of branches severed from the trees. He who injudiciously uses the saw on the live branches of fruit trees is decidedly the worst pest that visits the orchard. Certainly the orchard should be seen to, and dead limbs and unfruitful sprouts removed, and dense shade reduced, but the secret in fruit culture is in knowing when to let the trees alone. While visiting a man's place in the vicinity of Cincinnati last summer I was surprised at the abundance with which his trees bore fruit. The trees, too, were enjoying health, vigor and symmetry. No other reason could be attributed to the prosperity of these trees than the fact that they had

not been pruned for years, while other orchards in the vicinity, with the same advantages, were reduced to approaching barrenness by severe pruning. I have learned from actual practice that we prune old and medium aged fruit trees too severely, while we do not prune and correct the branches of young trees quite enough. A fruit tree, when it reaches mature age, needs to be let alone and remove nothing but sprouts and dead wood.

PEAR BLIGHT.

I see many of your readers are still harping on pear blight. My remedy, published in *Fruit Recorder* some years since, still continues a specific with me and all who use it, so far as I know. I have not had a diseased tree since I have used it. Those here who neglect to use it have blight. The trouble is they neglect to wash their trees in the spring before the bark lice hatch out. I do not pretend to know whether bark lice sting, or get into the growing twigs and cause blight, but certain it is if the trees are washed with strong copperas water, from about the 20th of May to 1st or later in June, no pear tree will have blight. Cost as near nothing as may be.

Prof. T. J. Burrill says in regard to pear blight, that the closest scrutiny should be kept during the growing season for any evidence of disease, for the beginning of blight is indicated by the evidence in the bark rather than by the discoloration of the leaves. Whenever observed, the diseased parts must be carefully cut away and the wound protected by a coat of paint. Everything depends in the excision of all the affected tissue.

LE CONTE PEAR.

W. C. Barry says that on a tour through Georgia, he saw large quantities of this thrifty and productive pear transported on the railways, where the common European and American sorts utterly fail. At Thomasville, Georgia, it is propagated on a large scale by cuttings, making a growth of six feet or more in a year. In other places in that State, propagation by cuttings has not succeeded.

VINEYARDS.

GRAFTING THE GRAPE.—THE STOCK.

Never select a weak or diseased vine upon which to graft. The cion should be inserted as near the surface of the ground as possible. Some think that the stock and cion should be of varieties as nearly alike in vigor of growth as possible. We should prefer to graft the weaker on the stronger.

THE CION.

This should be cut from a healthy, short-jointed cane of the last summer's growth and about the size of a lead pencil. It is better to cut it from the vine before hard-freezing weather, and keep it in a cool cellar, either in damp moss or sand, or else buried in the ground. An ice-house would keep the cion dormant for late spring grafting.

WHEN TO GRAFT.

With our present knowledge, the vine cannot be grafted satisfactorily either while the sap is running freely or (except by inarching) from the time in the early summer when the young shoots begin to turn hard and fibrous. This period generally commences about the time of the bloom and lasts until after the fall of the leaf. The best time for grafting is therefore reduced to two periods, the first one lying between the fall of the leaf and the active circulation in the spring, and the second one commencing after this exceedingly strong flow of sap has abated, and lasting until the full development of the first young growth. Dr. Wylie, of South Carolina, considered the fall or early winter, in that latitude, as the proper time for grafting. At Mount Tryon, Polk county, N. C., a friend of the *Rural* has been very successful in early March. Further north fall grafting is less reliable. At the *Rural* grounds we have succeeded well with cions set in late March. Some claim good success in mid-summer with cions of the same season's growth.

CLEFT GRAFTING.

The method of grafting most generally applied for larger stocks, or for plants which are already established in the open ground, is

cleft grafting. After clearing away the soil around the collar of the stock to be operated upon, to the depth of three or four inches, select a place below the surface with a smooth exterior around the collar; just above this place cut the vine off horizontally with a fine-toothed saw, or, in the case with smaller stocks, with a sharp knife; then split the stock with a sharp instrument, so that the cleft will run down about one-and-a-half or two inches. Insert the small end of the grafting chisel, or a narrow wedge, in the center of the cleft in order to keep it open, and then with a very sharp knife cut your cion—which may be three or four inches long and have one or two eyes—to a long wedge-shape at the lower end, so as to fit the cleft, leaving the outer side a trifle thicker than the inner one; insert it in the cleft so that the inner bark of both stock and cion may as much as possible make a close fit on each other; then withdraw the wedge in the center, and the cion will be held firmly in its place by the pressure of the stock. If the stock is a large one two cions may be inserted, one on each side. This mode of grafting answers for stocks varying from one-half to three inches in diameter.

Though not absolutely necessary with large stocks, it is best to wind the grafted plant tightly with some strong coarse string, or other suitable material, in order to bind stock and graft together. Then cover it with a grafting-clay; this clay is best made by thoroughly mixing one part of fresh cow-dung with four parts of ordinary tenacious clay. Grafting-wax, such as is generally used for tree and other grafting, is not recommended for the grape. Perhaps the resin or tallow has a harmful effect.

To complete the operation, replace the soil, piling it up so that the upper bud on the cion will be level with the surface. Our own plan has been to set sticks about the grafted stock about a foot high and then fill in with straw or similar material. This method of grafting may also be employed for small stocks. When the stock is nearly the same size as the cion a perfect contact of the bark (liber) can be obtained on both sides. Or two cions may be inserted in a stock of a little larger size. It may also be employed for grafting cuttings on cuttings, though for this, as well as for all small stocks grafted out of the ground, the Whip-graft or the Champin-graft may be preferred. The former is very generally employed by our nurserymen in the propagation of all small fruit trees; in making root-grafts, and it is very convenient for in-door work. In France millions of this graft are made every winter, mostly on rooted plants of one year's growth, but many also on simple cuttings of American phyl-

loxera-resisting kinds. The stocks and cions should be secured in good season and kept well-preserved in sand or moss or stowed away in the cellar. The cion and stock should be as nearly as possible of uniform size.

The improved Whip-graft or Champin-graft may be remarked upon as follows: We may first operate upon a rooted cutting. Cut off the top as close as possible below an eye or joint at the collar. Then with a grafting-knife, or any kind with a thin, narrow blade, make a nice, straight and regular slit from above downwards. Then holding the stock in the left hand, cut the thickest part of the slit end to an exact smooth level of equal length at the cleft. The cion should be selected as nearly as possible corresponding in size or thickness with the stock and, with two eyes, it is split and cut precisely in the same manner as the stock, except only, of course, that the cleft and level will be at the lower extremity instead of the upper. Then unite them, taking care that the bark of both fit together exactly and snugly, at least on one side. The graft is now ready for the tie which should be of some strong, pliable material. Adjust the tie firmly.

NEW GRAPES.

Mr. William Saunders is not forgetful when he says, "he has no recollection of any grape being introduced that was not pronounced far better than any other;" nor at fault when he adds: "Among hundreds so brought forward but few are really worth growing."

Geo. W. Campbell on new grapes: Among those of recent introduction he spoke highly of the Early Victor, Brighton, Vergennes, Jefferson, Centennial, Duchess, Empire State and Prentiss. A lengthy discussion followed, the Worden receiving a large amount of commendation, and many expressions were heard that it was more hardy, fully as productive, finer in quality and appearance, and several days earlier than the Concord.

When we think of the comparatively recent period when the Catawba, the Isabella, and the Clinton were the only cultivated varieties, and then remember the magnificent display of native American grapes made in the city of St. Louis at the first meeting of the Mississippi Valley Horticultural Society, in September, 1880, when there were 1500 plates of grapes, composed of 249 distinct varieties, the grandest exhibition ever made, we may be excused for some enthusiasm as to the future of American grape culture.

PRUNING VINES IN THE FALL—BY JUDGE SAMUEL MILLER.

It would seem presumptuous in me to tell the old vineyardists when to prune their vines; but for the benefit of beginners we would advise them to do their pruning as soon as the leaves have fallen. It is then done, and if the wood is intended for cuttings to propagate, it will be safe from severe frost, which injures the wood more or less of all, but the real Iron Clads. If dressed into cuttings and buried in soil where the drainage is good, they will grow callous to some extent during the winter.

GRAFTING GRAPES.

I grafted grape vines from the middle of April to the 20th, when the vines had grown a couple of feet. Now, May 12th, I find those grafted not one month ago about as well advanced as those set last December, and a much larger proportion of them growing, while those put in in the fall were no little trouble, as they had to be thickly covered and in the spring carefully uncovered at the proper time, while those set in April only needed to be shaded for a few weeks. Fuller said that if set in the fall and carefully protected, will make a larger growth the following season, but such is not my experience, for in the fall I could see no difference in that respect.

May 12th I grafted some of the newer grape grafts on roots of one year cuttings; making two of each. By fall some of these had made a growth of six feet, and very few failed. They were planted the same hour they were grafted.

This last plan is better than planting a cutting and waiting three years for fruit, while in this way one can make two grafts of one cutting, and can have fruit the following season if the grafted root be planted where it can remain.

We recently read that any old, twisted vine may be successfully grafted, by sawing straight down and chisseling out a mortise, and making a tenon of the graft to fit. Four months hence we will try it, if spared so long. There are hundreds of wild vines in the woods, that can be treated, and a graft taking on such a vine will grow enormously, sometimes capable of bearing ten to twenty pounds of grapes the following season.

On my hill place I have a Neosho (the only one on my grounds) now running pretty well over an oak tree six inches in diameter at the base. I climb up and prune it each winter. It bears well and is no trouble; was grafted on a wild vine.

In another place a graft of a novel grape sent me from the southwest was grafted on a wild vine, trained to an oak about eight feet high. The following spring both vine and tree were trimmed, and the vine tied up to its branches. But the past fall when I went to gather the grapes, I found that the vine was too much for the tree, and the whole rigging bent to the ground.

This grape bloomed after the late frost, hence the heavy crop. Next season it must have a better support.

If only people would try their hand at it, I am sure many could have plenty of the best new grapes.

Even these high-priced ones are usually small, and will require several years good care before one can expect fruit, while a graft well grown will give fruit in eighteen months.

I have a number of \$2.00 vines of different varieties that have been planted two years, and will not bear the coming one, while grafts taken from last spring and put on good stocks will give me considerable fruit next season.

Graft! Graft! Graft, I say, and if it were not for this excellent mode of hurrying up things, I should feel like abandoning grape growing.

S. MILLER.

December 14, 1883.

Professor Budd gives the following directions for grafting the grape. Root grafting, he says, is as easy and certain as grafting the apple. Scions of Delaware and other fine sorts may be grafted on such strong growing vines as the Concord, inserting the grafts on the crown of the roots early in winter, merely winding with wax thread without waxed plasters, and packing in boxes till spring. For out-door work, wait till the leaves are about two-thirds developed, and set the scion, by whip or cleft mode, low enough to be mounded for covering the place of union; the graft will usually make a good growth the same season. To obviate the difficulty of the crooked grain of the stock, lay the vine in a trench and graft the laterals near the surface. Professor Budd has known the Delaware thus grafted on wild vines to have a growth of ten feet the same season and bear a crop the next.

THE AMERICAN GRAPE.

President Marshall P. Wilder, in his late address before the American Pomological Society, thus refers to the future outlook for the American grape:

In the order of discussion I have placed the grape first in our roll. No other fruit, unless it be the strawberry, is now attracting so

much attention, and perhaps no other, if we except the apple, is of more importance as a source of revenue or an article of luxury for our tables as the grape. No other country possesses such a vast extent of territory, or possibilities for its successful culture, and in no other section of the globe is there at this present time such encouragement thereto. In fact, it seems as though Providence had designed many parts of our continent especially for its cultivation. The Scandinavian, as the Sagas have it, eight hundred years ago, here found the vine growing so abundantly that they gave to our coast the name of Vineland. Champlain in his voyages on our coast about five hundred years afterwards, saw vines in abundance. The Pilgrim Fathers, at Plymouth found grapes, "white and red and very strong," and should the phylloxera continue its devastation in the vineyards of the Old World, our country may become the most favored vineland of the world.

In the whole circle of our pomological progress there is no fruit which excites so much enterprise and interest, so rapidly being extended, or which gives greater promise of success, as the culture of the grape; and should this same enterprise continue for fifty years to come, we can hardly estimate its value as a revenue in our country. All localities are not equally suited to its growth; but where our wild species are found, other new and improved sorts, produced by hybridization, will be found equally well adapted. With every succeeding year new and valuable varieties are coming to notice, either adapted to special locations or purposes, or for general cultivation. Nor is it too much to hope that ere the close of this century, with our present zeal and skill, we shall produce varieties that will rival the choicest kinds of the most favored climes. Even now we have those which compare favorably with our foreign varieties, and we believe that the time is not far distant when the aroma of our native sorts, now so much despised by some, will become, when chastened down as it has been in the Brighton, Duchess, Rochester and Monroe, one of the excellent characteristics of our American grapes.

THE NORTON GRAPE.

How many new varieties are there brought out for every one that proves really worth retaining? A very small number, indeed, while the above named variety is overlooked by the majority of those who only grow table grapes.

The general impression is that it is only fit for wine, while, in reality, it is to my taste one of the very best table grapes and can be kept so easily a great part of the winter.

Its wine needs no comment, yet half of what is made, is not fully up to the mark. When well-ripened, and the wine properly made, it cannot be excelled by any other grape in America, except the Cynthiana. The latter is, in my opinion, superior as a table grape, but so long as people will insist in calling them identical, there is no use in saying much about it. One was found on an island in the James river, in Virginia, and the other on the banks of the Red river, Texas, and was called Red River before Cynthiana.

Forty years ago I trod the ground where the first Norton vine was found. We yet expect to learn how to grow these cuttings successfully.

S. MILLER.

GRAPE NOTES FOR 1883.

Ed. Rural World:—Not having time to visit Mr. Rommel's vineyards this year, in grape time, and being anxious to know how the various varieties behaved this season, I wrote to him asking for the information, and received the following interesting letter, which, though not intended for publication, I think too good to keep all to myself, therefore I send it to you for the good of your readers. He says:

"Our grape crop was quite satisfactory with most of the varieties. Elvira was all that could be wished. Norton's did well. Concord and Ives' below an average. Martha, a light crop. Goethe, a very light crop—winter-killed. Herbemont was winter-killed. Amber, a fair crop. Pearl, a very fine crop. Beauty, a fine crop, but was affected by rot. Transparent was very fine, but not very productive, nor fit for market, the bunches being small, but making a wine of high quality. Wilding gave a fair crop, but it too is no market grape, bunches are loose and skin tender; only good for wine. Montefiore gave a good crop of fine grapes, bunches about the size of Ives', but of much better quality, very promising for the production of fine, dark red wine. Etta did not set as good a crop as in former years, and ripened unevenly. It greatly resembles Elvira, only larger in berry and much better in quality. It is late and not to be recommended farther north. Faith did well. It requires age and long pruning to make it productive. Bunches fair; berry small; excellent in quality; exceedingly early; and on that account much injured by birds and grape-eating animals. Missouri Reisling is a late grape that I like. It is productive, healthy, and of very good quality. Brighton was fine, but generally it fails; not reliable with us. Noah was good, but is not so generally. Neosho had a heavy

crop; only a wine grape. White and Black Hermann were both fine this season, and matured their crops, which they do not always do. Bacchus, so much like Clinton that it can hardly be distinguished from it. Lady Washington and Highland were winter-killed, and had but little fruit. It may be said that all of Ricket's hybrids are worthless with us. Cottage did finely. It is a fine black grape, small, compact bunch, productive and reliable, better in quality than Concord; fine for market. Moore's Early, I can see nothing in to recommend it in our section. Some seedlings that I have, I believe, will become valuable, but they will need more extended trial.

The peach crop was light, Alexander doing best of all. All peaches rotted badly. Apples, a light crop, and mostly wormy. But very few pears, almost impossible to grow them on account of the blight. Small fruits were also scarce.

JACOB ROMMEL.

To E. A. REIHL, Alton, Ill.

UNFERMENTED WINE.

The *fruit of the vine* is undoubtedly one of God's choicest blessings, though man, by fermenting and adulterating the juice, has made it a curse. A. W. P., who appears to be a thorough expert in wine-making, has been writing a series of articles in the *New York Weekly Sun* on the subject. In the last and concluding articles he gives the method of making unfermented wine, which will be of use to those who have vineyards and do not want to make fermented wines but would like to utilize their grapes so as to make a healthy beverage that would keep for some months.

In wines stimulating properties are the least to be desired. It is questionable whether alcohol, as distilled spirit, or as wine spirit is ever of benefit to health. It may sometimes modify disease. We need wine as a beverage, as a nutrient and tonic, and these qualities are derived from the constituents of the fruit other than sugar, which is converted into carbon dioxide and spirit. Wine spirit may be considered as the inevitable, but undesirable, concomitant of fermentation, only of use as an antiseptic, by conducing to the durability of the product. This leads to another branch of the subject, on which information is asked. "How to make unfermented wine." After trying various methods I prefer the following:

Mash the grapes; boil or not, as convenient—by boiling more color is extracted from the skin—then press. When it is desired to bottle it sweeten the juice to taste with best white sugar, fill the bottles, set them upon a wooden foundation in a boiler, surround them

with water up to the necks, bringing to a boil, and boil for ten minutes. Then from one of the bottles fill the rest, to make up loss by evaporation, and cork them while hot. The sulphurous acid gas impregnating the juice will be volatilized and driven off by the heat.

This makes a commendable beverage. It is theoretically and practically pure. It is largely used by churches, where the aversion to alcohol extends even to the sacrament, and there is no nicer beverage for invalids, or for the thirsty soul who of a hot day wants a "long drink." A quart of unfermented juice, two quarts water, sugar, lemon and ice, is about as good a refrigerator as can be invented. There are no headaches in it.

THE NIAGARA GRAPE.

Wm. Saunders, of the Department of Agriculture, at Washington, says of it:

"For thirty years we have been familiar with grapes and we have probably tested all the varieties which have been introduced during these years. We have no recollection of any grape being introduced that was not pronounced to be far better than any other; and yet, among hundreds brought forward, but few are really worth growing. Just at present the Niagara is well kept before the public, and judging from the opinions given by those who have tested the fruit, it would be difficult to say what it is worth as an edible fruit. One will state that it is of the highest quality; another that it is foxy, of second class; the third will call it good, but not best—and so on. But if it is well kept before the public, we presume its owners will be satisfied."

BAGGING GRAPES—HOW, WHY AND WHEN TO DO IT.

Having been of the first to use this process, I conclude that by it we gain partial exemption from rot and more or less exemption from the depredations of birds and boys, and complete exemption from sun scald. The process, however, retards ripening, but tends to preserve the fruits from injury by wind or frost. In climates where rot in the berry is to be counteracted, I should bag when the fruit was not more than one-third grown. Further north defer the operation until the grapes commence to color, so as to hasten ripening. Grapes in bags may hang until after heavy frosts. Then, if picked and stored with the bags on, in a cool place, they come out during winter, ripe and are more delicious than by any other process. No. 1 bags of standard size are large enough for Delawares; Nos.

2 and 3 will be needed for medium and large clusters. If some manufacturer will give us bags just the tint of the leaf, he would fill his pockets; with these the vines would look more uniform and the birds and bugs would not be tempted so much. Good—not thick—manilla paper is best. The bags should be slipped over the clusters, folded and pinned close around the stem so as to exclude rain. The vines should be managed so as to develop large buds to obtain clusters worth bagging, and all small clusters should be cut off.

GRAPE NOTES FOR 1883—BY E. A. RIEHL, ALTON, ILLS.

With us the crop was very light, ranging from nothing to about a third of a crop. Various causes conspired to bring about such a result. The spring was cold and backward, so that the grape buds pushed through slowly, and gave the steel-blue beetle a fine chance to put in his work, which it improved to the full extent of its ability. Hail also did much damage in some vineyards, but the greatest damage was done by rot, which commenced early and continued until the grapes were ripe—that is, what was left of them.

As to varieties, I cannot say a great deal, because the newer ones of which I expected to have a good show on vines grafted in '82, did not fruit as expected. From what little fruit that did set, and the appearance and growth of the wood, my judgment would be about as follows:

Concord—Rotted badly, and I will plant no more of it—and if it continues to behave in the future, as it has for the last few years, I will graft it over with something more reliable.

Elvira—A nice grape, where it does well, but with me it never has done well, rotting on the surface at about the time it ripens.

Noah—Gave me more fruit than any other white grape, and I will not hesitate to recommend it for our section, as a good, reliable white grape.

Worden—As in the past, was ripe earlier, larger and much better in quality than the Concord, which it resembles in growth and fruit, and I can recommend it with confidence to all who can succeed with the Concord. It is so very much better than the Concord in size and quality that it should take the place of Concord entirely.

Missouri Riesling—It is a pity this grape was so named, for I believe it has come to stay. The name is too long, and it is not a seedling of the European Reisling as supposed by its originator, but the Taylor. However as it has been pretty widely disseminated under that name, it is impossible to change it, only we can shorten it by dropping a part of the too long name and call it simply

Reisling. It is a strong, healthy grower, abundant bearer, bunch and berry about size of Clinton, white, good for table and wine.

Vergennes—A strong, healthy grower, set some nice fruit on last year grafts, bunch and berry large, Catawba color, skin tough, and will make a good shipping grape, quality excellent, entirely free from foxiness.

Ey. Victor—The hardiest and healthiest vine I have on the place, keeping its foliage green until killed by hard freezing weather, and ripening its wood up to the very tips, a strong grower, and abundant bearer, bunches small and compact, much resembling Clinton in appearance, but there the resemblance ends. It ripens with the earliest, and is superior to all others, ripening as early as it does, and notwithstanding it ripens so early, it will hang on bunch and vine in good condition, after all the others are gone. This is without doubt one of the best black grapes we have, and I unhesitatingly recommend it for general planting.

Pocklington—Set a little fruit on last year's grafts, but did not come up to recommendations as to earliness or size, and I strongly suspect that those fine bunches that were exhibited by its disseminators were girdled to attain the earliness and size claimed for it. In quality I found it very good. In growth and healthfulness of leaf and wood it is exactly like Concord. By another season I can give a better opinion of it, and many other new varieties that I expect to fruit, and will then give a report on them.

SMALL FRUITS.

STRAWBERRIES.

Mr. Charles M. Hovey expresses the belief that "a batch of seedlings saved from the best varieties, will produce full as fine a lot of strawberries as nine-tenths of those named and offered for sale as superior to all others."

Green's Fruit Grower: We shall never mulch bearing beds of strawberries with straw again. Though a good winter protection it can not be made free from grain and weed seeds, and to thus reseed soil made clean by long culture is vexatious. Aside from this the

mulch is made the breeding place for insects. We found thousands of small worms had hatched under the straw before the frost was fairly out of the soil. It is suspected that the damage done to Parker Earle's, Cobden, Illinois, plantation by an insect eating into the berries is owing to the straw mulch, as when no mulch was applied no injury was done.

Mr. Hopkins picked the past season, 4,500 quarts of strawberries from one acre of ground that had been subsoiled to the depth of eighteen to twenty inches before planting. These he sold for \$11.50 gross, or \$9.50 per bushel in Kansas City, Mo., or a little more than twenty-five cents a quart clear of expenses. He attributes his success entirely to the subsoiling and believes it is the next best thing to irrigation and should always be practiced where irrigation is not feasible. The subsoil should not be turned up upon the surface but merely loosened. The best tool for this purpose is the old Mapes' Mole plow, which any blacksmith can make. It is shaped like a sad iron, of steel with sharp point and edges and two standards for attaching it to the beam. It travels along under the soil in the furrow of the turning plow, which should precede it, and lifts the yellow sub-soil like a mole, leaving it fine and light, in just the right condition for the fibrous roots of growing plants to penetrate during the drouths of summer. At the above rates of sale, the clear profit on this acre of berries amounted to over \$1,100. Who can give a better report?

At the present time the newer popular sorts are Sharpless, Cumberland, Crescent, Bidwell, Duchess, Windsor, Chief, Miner's Prolific, and others. A few more years will determine to what extent the superiority of some of these to the old sorts has been owing to the better cultivation they have had, on account of being costly novelties. There is now a vast number newly introduced and offered for sale with high praises, many of which will be forgotten in a few more years.

In contrast with this rapid mutation, examine the lists of apples, pears, and cherries, such as they were forty years ago, and observe how small the change is which has taken place. Of these fruits, new sorts of high merit are not so easily produced.

Dr. F. M. Hexamer mentions a bed of strawberries—Crescent and Charles Downing—which annually supplied a large summer boarding-house, and "the only cultivation it received for years consisted in an annual mowing with the mowing machine and the ploughing of alternate strips three to four feet wide." He does not recom-

mend this plan to those who aim at the best results, nor those who can give better care to their plants, but thinks it far wiser to raise the fruit in this rough way than to have none at all.

Mr. Purdy gives high praise to a new strawberry he proposes to call the Jumbo. He says it fruits from ten to twelve days after the Kentucky is used up. It is also, he says, exceedingly firm and will yield as many large, fine formed berries as any of sixty varieties he is growing.

Mr. Parker Earle of Cobden, who called at the *Prairie Farmer* office last week, says the Crescent is the only strawberry on his grounds, and in his vicinity, that did not suffer from the ravages of the "tarnished plant bug" this season. He is confirmed in the opinion that the Wilson is yet, all things considered, the best strawberry for localities where it can be grown to perfection, and this we believe is over a far greater extent of country than any other berry can be grown.

In Southern strawberry fields, very serious loss was occasioned by the tarnished plant bug (*Lygus lineolaris*), which I have demonstrated to be at least a part of the cause of the damage known as the "buttoning" of the berry. The dusty plant bug (*Daræocoris rapidus*) worked upon the strawberries in precisely the same manner and at the same time, being in some fields scarcely less abundant than the other. I have found that both these species may be very promptly and completely killed by pyrethrum either diluted with flour or suspended in water, and also by an emulsion of kerosene, so diluted with water that the mixture shall contain about three per cent. of kerosene.

LARGE STRAWBERRIES FOR SHOW.

Grow the large kinds—mulch heavy. Pick off all fruit as it sets, but half dozen on a hill. Keep well watered, putting a little rich compost in water, or prick a small hole through the bottom of can and sink it down to brim near the plant and fill it with water two or three times a week. Try it.

GROWING FRUITS IN SHADE.

We are often asked, "Can I grow strawberries, or raspberries, or grapes, in the shade of trees, or in a young orchard?" If the ground is almost completely shaded, we answer, you cannot successfully, but if sun reaches most of surface, one-third to one-half the

day, you can. However, there are differences in sorts about this, as, for instance, such strawberries as Green Prolific, Piper's Seedling, Crescent, Windsor Chief, Park Beauty, Glendale, Jas. Vick, Capt. Jack, Kentucky, Bidwell, and Chas. Downing are doing nicely with us in a young orchard, while the Wilson and Sharpless, with same culture and advantages, are not doing so well. Cuthbert and Turner raspberry, Kittatinny and Lawton blackberry, and Tyler and Gregg raspberry, succeed best of any sorts in partial shade.

HART'S MINNESOTA SEEDLING STRAWBERRIES.

Eds. Rural World.:—This strawberry is entitled to more credit than is given it by most of the fruit growers. It was the best out of 35 varieties (including most of the new ones praised so much) fruited with me last season, gave us more large berries and more quarts than any other, and sold for top prices; it is described by some as not very productive, "too soft," "will do for the amateur," etc., but my experience with it was most satisfactory. The following will speak for itself:

To make it plain, I planted in the spring of 1882 one hundred plants of it—6 rows, 35 feet long, 4 feet apart, or 1-50 part of an acre; by fall these were fine matted rows 20 inches wide. And from these one hundred plants and their increase (after having taken up 500 or 600 plants for transplanting) we picked (beginning the 28th of May) on the 11th of June seventy-five quarts of berries, mostly first-class fruit. Think of it, 3750 quarts of berries from one acre in one day's picking; although they had not been picked for three days previous to that, on account of the wet weather at that time. We had less "soft" berries to throw away than of any other variety, except Captain Jack, which was by far the firmest berry I had. I did not keep any record of the entire pickings, but know the one preceding the above one was something over 30 quarts, all large berries averaging in size with Triumph of Cumberland, though of a deeper red and conical shape, a very handsome berry. After the 11th of course the pickings were smaller, but they held their size to the last.

This is what Hart's Minnesota Seedling strawberry did with me. If any one can give better showing let us hear from them. I can not say what it will do another year, for last year was very unfavorable for strawberries, and it may have to "stand back" for some of the others which I hope to see in their perfection another year, which had a few extra fine berries, but mostly "buttons" or imper-

fect fruit complained of so much last season. May report later on some others.

HENRY SCHNELL,

HOWARD Co., Mo., Dec. 27th, 1883.

P. S.—The soil here is a deep rich sandy loam.

BETTER THAN MEDICINE.

A physician writing to the *Southern World* says: 'The small-seeded fruits, such as blackberries, figs, raspberries, strawberries, grapes, etc., may be classed among the best foods and medicines. The sugar in them is nutritious, the acid is cooling and purifying, and the seeds are laxative. We would be much the gainer if we would look more to our gardens and orchards for our medicines, and less to our drug stores. To cure a fever or act on the kidneys, no febrifuge or diuretic is superior to watermelons, which may, with few exceptions, be taken in sickness and in health, in almost unlimited quantities, not only without injury, but with positive benefit. But in using them, the water or juice should be taken, excluding the pulp; and the melons should be fresh and ripe, but not over-ripe and stale.

HARDY STRAWBERRIES.

Col. Colman:—In seasons like the past summer, we have a chance of determining what we can depend upon to stand heat and drouth. And as these seasons are by no means uncommon it will be well to confine ourselves to such varieties as will stand the test.

Here in good soil and level ground the following have been grown: Crescent, Albany, Capt. Jack, Cumberland, Triumph, Glendale, Chas. Downing, Mary Stuart, Manchester, Big Bob, Daisy, Old Iron Clad, Piper, Jersey Queen, Harts' Minnesota, Leming's White, Ida, Howell's Prolific, Ladies Pine, Magnum Bonum, Mrs. Garfield, Walter, Afrique, Crystal City and James Vick. Of all these, James Vick, Daisy and Jersey Queen stood it without flinching. All the others suffered more or less, and many would have died out but for excessive watering. Afrique, Ida and Piper, seemed to suffer most. Many of the above varieties will have a fair chance of showing themselves next season, and if spared we may report on them at the proper time.

I have been setting out plants all along, but when the ground begins to freeze, as it did last night, it will be about time to quit, as there will be but little advantage over planting next spring, except that the work is done. But they must be covered very soon, or they

would be lifted out of their boots before real winter set in.

And while on the subject, let me tell our friends that they can be covered too thick. A few leaves with brush laid on them is a good protection when available, when straw can not be easily got.

S. MILLER.

STRAWBERRY NOTES FROM OHIO.

Eds. Country Gentleman:—Among the new strawberries, the Manchester has pressed me so favorably that I would have no hesitation in planting it largely, and correspondents in many parts of the country have sent me favorable reports. It is a good grower and bearer, the fruit large, regular, good in color and fair quality. It will not surprise me if the Primo proves to be the most valuable of the new varieties. It seems to have all the good points of the Manchester, with better flavor and perfect blossoms. The Jersey Queen is the only one on my place entirely free from rust at this date. The fruit is large and excellent. The Big Bob is small and poor in other localities, but better with me. From what I have seen I expect a great deal from Arnold's Pride. The Mrs. Garfield is but little known out of my own place. I raised it from Crescent in 1878, and it proves a good healthy grower, abundant bearer, blossoms perfect, berries medium to large, bright red, excellent in quality. George W. Campbell calls it the best flavored of all large varieties. I have fruited the Daniel Boone seven seasons, and it has never disappointed me. It was our main dependence this season. The fruit is very large, regular, bright red, good in flavor; plants pistillate. Charles Carpenter, of Kelly's Island, says it will yield as many quarts as the Manchester.

Of the well known varieties, I regard the Cumberland, Hart's Minnesota and Mount Vernon as the best three. Hart's Minnesota is one of the earliest and remains in bearing a long time.

The strawberry crown-borer is spreading rapidly, is very destructive, and its habits not generally understood. The larvæ are carried all over with potted plants.

M. CRAWFORD,

SUMMITT Co., OHIO.

THE STRAWBERRY WORM.

(*Emphytus maculatus*, Norton.)

This insect is one of the most destructive enemies of the strawberry in localities where it secures a footing, but is not as widespread and continuous in its ravages as the leaf-roller and some of the va-

rious beetle larvæ affecting the root and crown. It is, however, to be placed among strawberry insects of the first class. It has occurred in great numbers throughout Central and Northern Illinois, Missouri and Iowa, and as far east as Ontario, Canada. Prof. Riley's terse description, given in his ninth report as State Entomologist of Missouri, can scarcely be improved upon, and I quote the substance of it in his own words:

"Early in the spring numerous flies may be seen hanging to and flying about the vines, in fields which have been previously infested. They are dull and inactive in the cool of the evening, and at these hours are seldom noticed. They are of a pitchy black color, with two rows of large, transverse, dull whitish spots upon the abdomen. The female, with the saw-like instrument peculiar to the insects of this family, deposits her eggs by a most curious and interesting process, in the stems of the plants, clinging the while to the hairy substance by which these stems are covered. The eggs are white, opaque, and .03 of an inch long, and may be readily perceived on splitting the stalk, though the outside orifice at which they were introduced is scarcely visible. They soon increase somewhat in bulk, causing a swelling of the stalk, and hatch in two weeks—more or less according to the temperature—and during the early part of May the worms attract attention by the innumerable small holes they make in the leaves. Their colors are dirty yellow and gray-green, and when not feeding they rest on the under side of the leaf, curled up in a spiral manner, the tail occupying the center, and fall to the ground at the slightest disturbance. After changing their skin four times they become fully grown, when they measure about three-fourths of an inch. At this season they descend into the ground, and form a very weak cocoon of earth, the inside being made smooth by a sort of gum. In this they soon change to pupæ, from which are produced a second brood of flies by the end of June and beginning of July. Under the influence of July weather the whole process of egg-depositing, etc., is rapidly repeated, and the second brood of worms descend into the earth during the fore part of August, and form their cocoons, in which they remain in the caterpillar state through the fall, winter and spring months, till the middle of April following, when they become pupæ and flies again, as related."

As the second brood of the larvæ appear upon the leaves in July, after the fruit is picked, and feed entirely upon the foliage of the plant, they may doubtless be destroyed without difficulty by the use of the ordinary poisons. Paris green, London purple or powdered hellebore may be safely recommended for this purpose. It is

also not unlikely that fire, as applied for the leaf-roller, would be found efficient for the destruction of this pest likewise, if used at the time when the eggs and larvæ are exposed upon the foliage. It should be noticed that plowing up the field in autumn will not actually destroy this insect, unless the ground is planted for a year to another crop, and that even then it is possible that the adult sawflies, escaping from the field, will secure a lodgment in other strawberry vines.

NOTE.—The foregoing is from Prof. S. A. Forbes' address on Insects Affecting the Strawberry, before the Mississippi Valley Horticultural Society at New Orleans, February 22, 1883.

STRAWBERRY CULTURE.

M. P. Wilder recently read a paper on strawberry culture before the Massachusetts Horticultural Society, from which we take the following extract.

"In regard to culture, the strawberry is a gross feeder; without a well prepared soil and abundant supply of proper food, and at the proper time, no great success can be anticipated. We should plant on land which has not been for some years occupied with strawberries, and manure and prepare thoroughly, and give a good top-dressing immediately after the fruiting season, and repeat this in the spring, being very careful not to disturb the roots. Well-rotted stable manure is good; ashes—or as a substitute, muriate of potash—and bone are excellent fertilizers, and these are the better if composted with soil or manure, and allowed to heat before using. In this climate, the spring is the best time for general planting."

"But when every care has been taken in planting, we have often to contend with the heat and drouth of summer, which is the most formidable of all difficulties. No plant is more benefited by a constant supply of water in the fruiting season than the strawberry. 'Give the strawberry water! water! water! and still a little more water!' Grown on a large scale for market, the means for irrigation should be provided so that water might be given whenever needed."

"Some varieties require to be grown in hills, and to have the runners cut off so soon as they appear. Such are the Sharpless, Bidwell, and Triomphe de Gand. Some are pistillate, and require the bi-sexual kinds to be planted near by, and to bloom at the same time. Such are the Hovey, Crescent, Jersey Queen, and Manchester. For want of proper impregnation, these kinds often fail of a crop, but with a suitable companion, the pistillate varieties produce very

large crops, as did the Hovey forty years ago. Some varieties produce a large number of trusses, and give promise when in bloom of extraordinary crops, but do not yield so much as those of less pretentious appearance. There is a limit to the power of production, and where there is a superabundance of trusses of flowers, only a portion will set their fruit and carry it out to perfection without excessive stimulation. Another cause of failure is a deficiency of pollen in some of the bi-sexual varieties, and it is well to plant them near such as are furnished with an abundance of it."

A SUMMARY OF STRAWBERRIES.

The possible spread of the strawberry insect so destructive this year in the large fields of Union county, Ill. and adjoining neighborhoods, promises to add another to the contingencies that stand between hopeful planting and longed-for crop. The enemy's power for harm was particularly displayed on the premises of Mr. W. W. Plater, who reports his plantations "completely ruined," and Mr. Parker Earle suffered loss to the extent of two-thirds of the expected yield, getting "5,000 cases instead of 15,000." The insect referred to showed decided preference for some varieties. Sharpless seemed to be the favorite, "hardly a berry escaping." Crescent was for the most part let alone, if, indeed it was touched at all.

Observations during the Illinois visitation have pressed the question, "Is mulching injurious?" It appears that the plantations where the enemy was most destructive were those covered in fall or winter, thus affording, as *The Farmer and Fruit Grower* says, "a harbor and factory for the bug." That paper mentions several persons whose unmulched beds were "entirely free from the bug which wrought such ruin on the mulched fields." In view of these facts, and the teaching of his own experience, Mr. Charles A. Green declares he will not mulch any more, certainly not with straw, which at best seeds the ground to grain and weeds, and affords a breeding place for insects. Last spring, for instance, he found that "thousands of small worms" had hatched under this shelter before the frost was fairly out of the ground.

SMALL FRUITS IN NEW JERSEY.

The Crescent furnished our first dish of strawberries, on June 9th, and from that date till July 10th, two to eight quarts of berries were consumed daily at our table. Although rather acid, the Crescent is of fair quality. The Crystal City, so highly praised for its earliness, may be a little earlier, but it is so unproductive and insig-

nificant in size as to be nearly worthless, and it has been plowed under. Miner's Prolific has size, vigor and productiveness, and the quality is usually very fair, but it often ripens unevenly. I know of no berry which adheres so tenaciously to the calyx. Charles Downing, for good size through the season, with good quality and bearing, is on the whole about the best of all. It gives satisfaction on the table every time. Its only drawback is that it sometimes blights badly. Bidwell is good in flavor, and perfect in shape and color, but is not productive enough, and its white tip is an objection. Manchester gave an unusual crop of large, handsome, scarlet berries, rather acid, and is less firm than I had hoped. Visitors have preferred its rich acidity to the Sharpless. I have seen it in some places where it was a failure. Sharpless stands at the head for size, and has proved a good cropper. It is sweet, not high flavored, and is a most robust and vigorous grower. Cumberland is fine in size, shape and quality—one of the very best. Mount Vernon has failed to come up to the claims made for it. Jersey Queen is of queenly size and handsome appearance, and produces abundantly. If Mr. Duran's "Superb," re-named "Prince of Berries," should do as well as Jersey Queen, it will be an acquisition, as I consider it by far the best berry he has ever sent out.

MULCHING STRAWBERRIES.

Some of our most successful gardeners have adopted a new mulch for strawberries, and find it to be the best they have tried. It consists of coarse gravel sand (from underground pits) applied evenly about three inches thick. There are no weed seeds in the sand, and if the ground is rolled, to level all irregularities, and sand carefully applied, no weeds will see the light. It is thought that the sand makes the berries earlier and sweeter, as it is much warmer in spring than other mulches. Sand is a wonderful improvement to our clay soils. A home strawberry bed is very often desired to be permanent, and it can only be made so by keeping the runners cut. This can be done very rapidly by fixing a common rolling cutter to a pair of handles, and running it close to the rows. If two cutters can be had they may be rigged to cut both sides of a row at once.

Q.

STRAWBERRIES IN JACKSON COUNTY, MISSOURI, IN 1883.

The past season was rather a peculiar one in this section; it was very dry during the entire month of April up to the middle of May, when we had deluges of rain for several weeks, making one of the

muddiest and most disagreeable seasons for handling strawberries ever known in Western Missouri. Berries would not keep after becoming ripe on the vines at all, especially plants of heavy foliage, like the Sharpless. Many berries moulded; and even the vines became coated with a heavy white mould. Vines of light foliage fared much better, as the ground had a chance to dry out.

The strawberry crop in this section was all the way from indifferent to extra good. Some patches yielded enormously; others only moderately. But all plantations, or very near all, produced an unusual amount of "buttons," or imperfect berries. Towards the close of the season the quantity of "buttons" was appalling, and proved a quietus to the hopes of many a grower. The cause of so many imperfect berries is beyond my comprehension. It was stated in our Society by members, that it was owing to the excessive rains, which had prevented berries from becoming properly fertilized. The only trouble I see with this theory, is that the great bulk of the berries were shaped, in fact, some were just ready to ripen before the drought terminated. Besides, in most fields the "buttons" began with the first ripe berries and continued throughout the season.

Though the season, in some respects, was very unfavorable, and prices ruled very low in comparison with 1882, yet our berries brought at the rate of a thousand dollars per acre; considering the prolonged drought, the everlasting rain and knee-deep mud most of the time, we think our showing is creditable. We fruited the past season some fifteen varieties on our grounds, and, after close observation of the fruit and vines under all circumstances, would say that the most profit and best satisfaction were received from the four following varieties: Captain Jack, Crescent, Downing and Windsor Chief. I will briefly run over the "points" in the berries we have fruited.

Capt. Jack—Again, for the third year, I put this berry at the head, because it has given us more berries, more money and better satisfaction in many ways than any berry on our ground. I need not enumerate all of its good qualities; the berry is well known in the west, but I would like to say one word in favor of its firmness. The past season this was a quality in a berry that was appreciated both by the seller and buyer; while at times it was almost impossible to save the softer berries, like the Crescent, in anything like decent shape, the Capt. Jack would stand all the rain, mud, sunshine and humid atmosphere, and come out bright and tempting. Buyers were always after a firm berry, it was a greater desideratum than size, quality, or anything else. The James Vick may be superior to

it in some respects, but should it prove no better, it will be a safe berry to plant.

Crescent Seedling—Yielded enormously for us; the berries were in size from medium to quite large. It is our earliest berry. It lacks firmness, but in an ordinary season it goes into market in fine shape; where it is properly cultivated, it is a safe berry to plant.

Charles Downing—This old favorite produced a fair crop of fine large berries of splendid quality. but it still persists in refusing to yield as bountifully as I would like to have it; otherwise it is a good berry. Stands all extremes of climate first-rate. Rusts every year badly, and as regular as clock-work; but don't seem to hurt it in the fruiting season. A good old variety that will live and be respected for the good it has done, when many of the "dude" varieties have been forgotten. Mr. Hopkins, one of the oldest and most successful strawberry growers around Kansas City, reported his one year old Downings as being a failure the past season. Other patches also failed to produce anything like a fair crop—cause unknown.

Windsor Chief—Is undoubtedly a great berry; prolific, beautiful in form and color, large in size, and fair in quality. It lacks firmness; but for a near market it is a No. 1. berry to plant. Our Windsors were magnificent the past season, it yielded an immense crop of berries, held up to the last in size, one of the very best in this respect.

Miner's Prolific—Did the same old trick for the third year in succession—immense promise of fruit—regular wind-rows of berries. Produces for about half of the season as magnificent a berry as the eye would desire to see, when all of a sudden it seems to go into bankruptcy, and the assets are a vast quantity of small blackish looking berries, apparently of the same size, with scarcely a fine berry left to tell of its former glory. The small berries are as near worthless as anything I ever saw. In some soils it seems to do well. A neighbor had some that were large and held up in size to the end of the season.

Glendale—Is no account, and must soon be discarded as worthless. Why it is still praised by eastern growers I do not know. Certainly it would be hard to find a berry possessing so few deserving qualities.

Sharpless—This fine berry did splendid for us the past season. It was not hurt much by the last frosts we had in May. Produced magnificent berries in size, quality and color; but somewhat deformed in shape. Of all the extra large berries I prefer the Sharpless. It is moderately productive, and combines more good points

than any of the large berries that we have tested. Our experience is strongly against tinkering very much with those "~~shorthorn~~" berries. There is much more pay in a productive medium size berry.

Longfellow—Has nothing to recommend it to the grower. In reality poor. Unnatural shape, and produces but few berries.

Warren, the companion of Longfellow, is a magnificent berry in quality and appearance. So said every one who tasted it, except the committee, who gave the preference to the Mt. Vernon as a table berry (?). There is in fact nothing that approaches it in quality on our grounds. It is truly delicious right off the vines without the application of sugar and cream. It is perfection in flavor, of a dark crimson color, with prominent golden seed, which give it a beautiful appearance. But it is no cropper. While it would pay to have a few for family use, yet it would not prove profitable to grow for market at ordinary prices.

Bidwell—This berry did not give us satisfaction. It is inclined to have white tips; it ripens too much at once; the form of the berry is not good; size medium; quality rather inferior; vine a fair grower. There is no reason why we should plant this variety. We have better ones.

Green Prolific—This old variety is indeed prolific, and, taken altogether, it is not a bad berry. Fine in form; fair quality; large size; color rather too light. Its worst faults are want of firmness and a tendency to ripen the berries in too short a time. Vine as vigorous as a burr-oak.

Colfax—This old variety, closely resembling the Downing in form and color, though not so highly polished, is a great and sure cropper. It stands the changes of our climate to perfection and is a healthy and vigorous grower.

Finch's Prolific—This is not much of a berry; rather a light cropper; medium to large in size, dull in color, with very little gloss; not an attractive berry by any means. Firmness about like the Downing. We have better varieties well tested. Don't think it will become popular.

Cumberland Triumph—I think this berry has been overrated. It is not near as productive as the Sharpless, and not as handsome in color. The berries are large to very large with but few small ones. Color rather too pale. It is a very soft berry, and in seasons like the past it is difficult to handle it in good shape. Buyers preferred a firm, bright, medium-size berry. In some soils it produces quite well. The plant is a strong, healthy grower.

Mt. Vernon—This variety gives but little promise of ever becoming popular. Its lateness, which was one of its chief characteristics, does not amount too much. The Capt. Jack and many others hold out fully as long. It yielded a tolerable crop of large size berries, of a very dull color, with but little gloss; rather coarse looking. It is very soft and when over-ripe it goes quickly into the mushy condition so much dreaded by retailers. Quality rather poor. Plant, a strong and vigorous grower.

We also have growing spring-set plants of the Manchester, Big Bob, Old Ironclad and Piper. With the exception of the Ironclad, the other three give but little promise of a useful career in this section of the country. The dry weather in August and September crippled the Manchester and Big Bob to a great extent. They are badly killed out, and what are left have the appearance of the last rose of summer. The Piper is in a little better condition, but still far from that robust state the strawberry should be in at the beginning of winter. Old Ironclad stood the dry weather first-rate, and looks bright and green. It is all right for the winter. It may prove a valuable acquisition. From experience we naturally grow skeptical with regard to the merits of new fruits.

Our strawberry vines are in fine condition and promise to winter well. The dry weather did not materially injure them. The outlook at present is favorable for next year in this section.

The raspberry crop the past season was very good in this part of the country. The Cuthbert is coming to the lead as a red raspberry.

The Gregg is gaining friends rapidly as our best late black cap. It will shortly supersede the old Chester. The blackberry crop was very light the past season. The past year, with all of its drawbacks, proved to be financially a healthy and hope-inspiring year to the small fruit-growers.

EUGENE LINDSAY.

WESTPORT, Mo.

RASPBERRIES.

The Hopkins Raspberry propagated by M. M. Hopkins, of this city; as to its good qualities we clip the following from the pen of one of our most experienced fruit men:

You ask what do I know of the Hopkins Raspberry? I can say that I have been fruiting it along side of many of the crack raspberries during the past six years and believe it to be the best berry yet introduced. The Hopkins originated in Jackson county, Mo., three miles southeast of Kansas City, is a chance seedling, is a strong

grower, much more so than the Mammoth Cluster. It is as early as Doolittle, has its firmness.

In size it is larger than the Doolittle and is close to Mammoth Cluster. Its shipping quality is first-class. We often send it to Denver, 700 miles, in good shape. It is an iron clad and as for quality it is superior in fineness to any berry I have as yet seen. I have as yet to find a cone rusted of this variety, while Gregg two years planted has shown considerable and right side of Hopkins. I have as yet to find a single objection to this berry. Of the black caps it is worth all the best grown by me and I have tried nearly all so far introduced.

Very respectfully,

FRANK HOLSINGER,

Treas. Mo. Val. Hort. Society.

ROSEDALE, KAN.

Mr. E. Williams, of New Jersey, who we know to be excellent authority, has the following about raspberries in the *Country Gentleman*: "The Early Prolific is the earliest and most productive of the red varieties and has always given us better results in every respect than Reliance. Highland Hardy is a little earlier, but too small and light a bearer. Turner is a little better, but too small. Cuthbert is large and productive when well cultivated and thinned. Superb is large, productive and promising, and there is little difference between this and Montclair, the latter being the sweeter. Brandywine is no account save to produce plants. The little fruit which it gives is hard, dry, and destitute of good qualities. Clarke produces fine berries, but they require careful handling even for home use, and the plants are not fully hardy. Shaffer is a very vigorous grower, the fruit resembling red black caps till fully ripe, when it assumes a dark color. Some of the berries are monsters in size, averaging seven-eighths of an inch in diameter. It is about the same in quality as the Rochelle, which we have had to discard on account of its liability to disease. The Caroline gives us great satisfaction, being hardy, healthy and productive, the berries large, very attractive in color and admirable in quality. It finds its way to our table oftener than any other."

THE NEWER RASPBERRIES.

The Souhegan is a jet black berry of large size, good quality, and ripens a week before the Doolittle, of which it is a seedling. The canes are extremely hardy and vigorous. Greatly praised by all who have seen it.

The Tyler and Hopkins are two large, early black sorts, superior to the Doolittle every way.

The Duncan, or Kentucky, is nearly identical with the Gregg, which latter is the largest and latest of the blackcaps.

The Mammoth Cluster, is the best of the old sorts. The Seneca and Sweet Home are esteemed as valuable.

Of the red varieties, there are many new seekers for favor, and all highly lauded by interested parties. Of these, the Hansel appears to take the lead as the most promising variety, being very early, very prolific, handsome and firm. The Cuthbert is another excellent market variety, but of lighter color than the Hansel. Shaffer's Colossal is large, firm, and of good quality; though red, it propagates entirely from tips. The Crimson Beauty and the Superb have earliness, large size and productiveness to commend them. The Reliance is very prolific, but of poor color. The Marlboro is a new Hudson River variety, not yet disseminated. Of the older varieties, the Turner and Thwack are the best and only good sorts for markets.

SOME OF THE NEW RASPBERRIES.

I believe there was a promise to give you an account of some of these fruits later in the season. The Crimson Beauty fills the bill, and is closely, if not fully matched by Staymane No. 2. This latter and Scarlet June have been in fruit for the past ten weeks. Not a day but that some ripe fruit could be picked from the stalks, and at times a pretty fair mess of delicious fruit. The last ripe fruit I picked not a week ago. Whether this is going to be their character as a rule, or not, I cannot tell, as this is only the second year we have it; but, if they do, we certainly have the nearest of an ever-bearing raspberry that I have yet had on my grounds.

Schaffer's Colossal is certainly destined to make its home with us. A splendid crop of large, handsome, good berries, that have no equal for a jelly or preserving and for making raspberry vinegar. And that is not all. Our crop was more than we could use in the house, and yet not enough to make shipping an object, we converted some into wine. A five gallon keg lay in the cellar since July, that was a temptation at times, but was left untouched until a few days ago I thought it ought to be racked off. Of course it had to be tasted, and nothing for a long time surprised me more. Of course it was expected to be good (we always mean that when we make wine), but was not prepared for such a treat. Had I not known that it was made of raspberries it is doubtful if the taste

of the fruit could have been distinguished; very dark, very heavy, and more like Port or Burgundy than the wine of other fruit. Here is a fruit that never rots or mildews, no crop blight or winter kills and will produce as much to the acre as almost any grape will.

Some of the young canes of this season are an inch in diameter at the ground, and although pinched back in June are ten feet long including the branches.

Caroline fruited the first time with me the past season, and comes up to the description. A hardy, handsome, white raspberry, of good size and excellent quality. Almost as good as the old Brinkle Orange, which is at the head of the list in point of quality.

Yours truly,

S. MILLER.

TRANSPLANTING.

Raspberries and blackberries can be transplanted successfully when the new growth is six to eight inches high, by taking up in damp cloudy weather.

RASPBERRY CANES.

When to cut the canes of old raspberry bushes is still a mooted point. Some growers think it makes little difference so far as the effect produced on the young canes is concerned. Others hold the opinion that it is best to leave them until the end of the growing season, and that to cut them sooner is to injure the plants. Mr. Chas. A. Green, who is good authority in such matters, writes to the *New York Tribune* as follows:

"Recent experience and experiment have convinced me that they should be removed as soon as the fruit is gathered. At this season, August 10th, the old bearing canes are yet alive and may be cut easily with a sharp hoop attached to a handle two feet long, after which the field may be more thoroughly cultivated and hoed than if the encumbering canes were in the way.

"But aside from this, the old canes appear to draw on the vitality of the plant, and seriously affect its capacity for fruit bearing. It is now held by scientific men that a dead branch exhausts the vitality of the tree as much as though alive. The dead canes on raspberry bushes would appear to affect them in like manner. Bushes not cleared of old canes produce small, defective, crumbling specimens. The first year or two the bushes are not so seriously affected. Hereafter we will trim ours as soon as the fruit is gathered, sweep them out of the spaces between rows with a horse-rake, similar to a

steel-toothed hay rake, but very short and no wheels, and save the ashes."

THE CRIMSON BEAUTY.

Samuel Miller writes the *Rural World*: "The Crimson Beauty fills the bill, and is closely, if not fully matched by Stayman's No. 2. This latter and Scarlet June have been in fruit for the past ten weeks. Not a day but that some ripe fruit could be picked from the stalks, and at times a pretty fair mess of delicious fruit. The last ripe fruit I picked not a week ago. Whether this is going to be their character as a rule, or not, I cannot tell, as this is only the second year we have it; but, if they do, we certainly have the nearest of an everbearing raspberry that I have yet had on my grounds."

FAY'S PROLIFIC CURRANT.

The latter part of July we received from George S. Josselyn a box of the new red currant, Fay's Prolific. The berries, which hold their size very evenly from top to bottom, were fully equal in size to the best specimens of the Cherry currant, and the bunches were nearly twice the length of those of that variety. The color is a bright red. The fruit is less acid than the Cherry currant, and more nearly resembles the Victoria in that respect; of these two varieties it is a cross product. The unanimous testimony of all who have fruited this variety, and the number is now large, leaves no room to doubt that its productive capacity is greater than any other, and, consequently, it must soon take the highest rank for market cultivation.—*Vick's Magazine*.

We have before us a circular describing Fay's Prolific currant, and giving a drawing thereof. The bunch is given as six inches long, the berries which show on one side of the bunch are twenty-three, and, to be merciful, we will suppose there are only four not visible on the back of the bunch—twenty-seven. Not one of these berries is less than an inch and a half in circumference. Most of them are two inches. To say the least, it is wonderful, and there are not many who ought to expect to see such a wonder.—*Gardener's Monthly*.

PEACHES.

MONTEVALLO, Mo., June 30, 1883.

I send you this day by express, prepaid, a sample of my new peach, King of Earlies; this season is full twenty days late. Apples will not make more than half a crop, peaches one-fourth of a crop and blackberries three-fourths of a crop. We had a good crop of strawberries. Raspberries were all killed by the frost on the 22d of May. The wheat is nearly a failure in this county. Other crops look well.

Yours truly,

JACOB FAITH.

The sample sent was of an excellent quality, superior to the Amsden. Jacob Faith is a practical fruit man in every sense of the word, and can now boast of having propagated the earliest peach on record, it being about two weeks earlier than the Amsden.

EARLY PEACHES.

At Denison, Texas, on the 9th of June, Mr. T. V. Munson exhibited the following named varieties: Alexander, Amsden, Brice, Ashby, Baker, Kelly's Early, William's Early, Larkins, Climax, Engle's Climax, Hynes' Nectar, Cally Scaff, Eureka. Wilder, Waterloo, Alpha, Bower's Early, Gov. Garland, Musser and others, which could scarcely be distinguished one from the other, except that Musser is a little the earliest, Alexander a little the largest, and Wilder's Early, Waterloo and Excelsior a little the latest. All are productive enough, sure bearers, and, like their parent, Hale's Early, are subject to rot in wet weather, or in heavy, damp lands.

THE WAGER PEACH.

We are indebted to R. Johnston, nurseryman, of Shortsville, N. Y., for a basket of fine specimens of this newly introduced variety (received Oct. 1), which is attracting much attention for its hardiness, great and early productiveness, and for bearing when most other sorts fail. The fruit is slightly oblong or oval, distinctly marked with a suture and pointed apex, rich yellow, faintly reddened next the sun, the flesh light yellow, firmer than most freestones and separating freely from the yellowish brown stone. It is medium in quality, and is said to be particularly adapted to drying and canning.

The specimens sent measure two and a half inches long and two and a quarter cross diameter. Like some other yellow-fleshed varieties it reproduces itself from the stone with scarcely any variation. Mr. Johnston writes: "The specimens are not up to the standard this year in quality or size, as is the case with all fruits, on account of the unusual weather. The Wager is highly esteemed by all acquainted with it, for never-failing productiveness, solidity, and especially for canning. As a proof of its early bearing, I have several three-year-old trees, each bearing a score of peaches as good as these I send you. I think I could carry a dozen such trees under my arm." Mr. J. also states that on taking an extensive ride through a peach region where it is cultivated, he found men who had grown it for twenty-five years, and who had reproduced it from the pit, preferring such trees to budded ones, and that he saw trees thirty years old well filled with fruit, and which had failed but once in that time. It would be a capital variety to cross with some of our most delicious sorts for producing new ones.

YELLOWS IN THE PEACH.

The recently issued report of the experiments of Prof. D. P. Penhallow, of Houghton Farm, on the disease of the peach known as the yellows, (for a copy of which we are indebted to Henry E. Alvord, general manager of that experimental farm,) indicates a vast amount of laborious and thorough investigation, and has developed important facts in relation to this disease, which will serve as a valuable guide for observations and experiments at this place and elsewhere in future.

In order to obtain as much practical information as possible on the subject, a series of questions were addressed to one hundred and fifty prominent peach-growers in New York, New Jersey and Massachusetts, with the mortifying result that only four responded. These questions were of a simple character, asking for dates of the first appearance of the disease, age of trees, early indications, extent, duration, influence of locality, effect of manures, etc. To supply the want of information thus sought, Prof. Penhallow has made many personal observations. The earlier and later history of the disease is given, its first recognition, so far as he could learn, being in 1806. Its more recent ravages have been greater in New Jersey than elsewhere, the peach orchards being gradually driven northward, and the counties of Morris and Hunterdon being at present most largely interested in the culture of this fruit.

The opinion of the fungoid origin of the disease not having been sustained, the present investigations, at the suggestion, in the first place, of Prof. Goessmann, have been based on chemical examination. Analysis has shown that a large accumulation of starch exists in the diseased tree, an excess of lime, and a want of potash. The external indications, as have been long known, are stated to be premature ripening of the fruit, with purple discolorations of the flesh, and deficiency in flavor the first year; and small yellow and red leaves and clusters of wiry twigs from the larger limbs, the second year, followed by the death of the tree. Examinations indicate that the roots are always healthy. For prevention and remedy, only well decomposed manure is to be applied, and the wiry twigs cut away; cultivate well, and apply the following fertilizers, in the quantities given for an acre of from seventy to one hundred trees:

Kieserite, 25 pounds.

Muriate of potash, 100 to 150 pounds.

Dissolved bone-black, 450 pounds.

In an advanced stage of the disease, add more muriate of potash, giving about four pounds to a tree of moderate size. Apply in spring before growth commences, and again in autumn. To apply the fertilizer, we are told to "spade the ground as far as the roots extend." This direction would convey an erroneous impression, as the roots in peach orchards even only a few years old meet between the rows, and to spade many trees, or a whole orchard, would be impracticable. It would be better, therefore, to work them in by horse-culture except in isolated cases.

We are informed that Dr. Goessmann treated diseased trees with phosphatic fertilizers and muriate of potash in 1878, and the trees were restored to health, and they have since borne excellent fruit. Prof. Penhallow has one hundred diseased trees under similar treatment, sufficient time not having yet elapsed to determine the full result. These experiments should be repeated in different localities, as variations in soils have given results more or less unlike in different parts of the country.

BUDDING THE PEACH.

Owing to the severe drought in 1881, my young trees were not in a condition for budding till it was too late, as I thought, for them to set; it was then about the middle of October. I did, however, bud a few, and they set well, as it was a late fall; leaving the rest to be budded next June. Along toward the last of May I began

budding, having previously pinched back the young shoots that I intended to take the buds from, so as to hasten their maturity.

After inserting the bud I broke the top of stock about half off, eight or ten inches above the bud and not detaching it from the old stub; this is beneficial in two ways: first, it shades the bud and protects it from the hot sun; secondly, it throws the sap downward and causes the bud to set sooner. After the bud has well started I go over and cut the stock off just above the bud.

I have obtained from June buds trees from 3 to 5 feet high, stocky and well proportioned.

I have a lot of trees that I intend budding this June, and also a lot of young trees of this year's growth that I shall bud in June. If desirable I will give the result.

Truly yours,

H. A. SMITH.

HOW TO GROW PEACHES.

State Pomologist, P. M. Augur, who has planted nine peach orchards in forty years, related at the meeting last week of the Connecticut Board of Agriculture, in Waterbury, various useful items of experience in his efforts to make the culture of this fruit a profitable business. Yellows has been the worst obstacle, but now manuring with potash in some of its forms seems to prove an antidote, and gives healthy growth to the trees. Rather poor land is to be preferred for the peach, as rich soil forces a growth that is killed in winter. Would withhold cultivation late in the season to prevent late growth. Finds seedlings no hardier to withstand climate or diseases than budded trees, while the latter, if well selected, give greatly superior fruit. The idea so prevalent that we cannot raise such good peaches as formerly is a fallacy. No better fruit ever grew in anybody's boyhood than can be produced.

Best results are obtained by Mr. Augur upon high land not subject to early or late frosts, and plants second early varieties in preference to the very early, which would come into competition with the fruit of the south. Except for the very late sorts he would not select a southern exposure. Late peaches may finish off ripening, like pears, after being picked and packed in boxes. Shortens in the new wood after the leaves fall, to keep the branches stocky and able to bear their burden; also, thins out to give sufficient sunlight to the ripening peaches; also, thins out wood, to save hand-thinning of the fruit. Showed a cross-section of a tree that was twenty-one years old, and which had produced good annual crops. Crawford's Late

he considers the king of peaches, but Crawford's Early, Old Mixon and Stump the World should not be omitted from any standard selection.

ELEVATIONS FOR PEACH GROWING.

It may be remembered that when altitude is spoken of in peach-growing, mere height above the sea is not intended—any elevated spot which will admit of the fogs falling into the lower ground is the idea intended to be conveyed. And this is probably true of all fruits, as of peaches. However, in regard to peaches, the editor of the *Country Gentleman* remarks, "That it is not altitude above the sea level which affects the bearing, but ground sufficiently elevated above sheltered valleys to be above the lakes of cold air which settle in those valleys. We have found by the thermometer a difference of several degrees, on cold, still nights, between the temperature at the bottom of such valleys and only fifty feet up. Those valleys may exist on table land a thousand feet high, and be fatal to the peach crop; and hills where the crop escapes may be only a hundred feet above sea level.

THE CURL.

The curl in the peach leaf is caused by the growth of a fungus growth known as *Exoascus deformans*, Freckel, (*Ascomyces deformans* Berk, *Taphrina deformans*, Tul.) During its growth it not only causes the leaves to curl, but to lose their green color and become more or less red and yellow, and we see from this, therefore, that such leaves are incapable of performing their normal functions in the assimilative processes of the plant. The necessary result of this is, that there is a very limited formation of wood while such leaves remain on the tree. For this period, therefore, it must be admitted that the curl does exert a positively injurious influence. It is found, however, that these leaves fall off during the month of June, and a new set of leaves free from curl appears. Upon these, then, the entire growth of the season depends, and because, unless otherwise diseased, the tree then very frequently makes a fine growth, fruit-growers generally believe that the curl is of no importance, and that it does not injure the tree at all.

Such views are manifestly erroneous, and it would be much better for the peach industry if our fruit men would apply remedial measures as soon as the curl is manifested. According to my own observations, each year more fully confirms me in the belief that the

presence of curl is indicative of low vitality in the peach tree, and that the yellows will be quite apt to follow shortly. I trust these lines may have the effect to stay the progress of erroneous ideas which seem to be gaining altogether too rapidly.

D. P. PENHALLOW.

THINNING OUT.

A. S. Dyckman of South Haven, Michigan, one of the most successful peach growers in this country, thins very thoroughly. He stated some years ago at the horticultural society at that place, that a part of his thinning was effected by pruning or cutting back; that the cost of the operation was five cents a bushel, and the price was often doubled. His rule was to leave but one peach on a shoot six inches long, and two on a limb a foot long; making the spaces between the specimens as nearly equal as practicable. Sometimes he found it necessary to remove nine-tenths. He worked from the center of the tree, and finished one branch at a time. This thinning saved the labor of picking a great many small specimens when ripe, and nearly obviated assorting for packing.

The work should be done as soon as the fruit sets, or when it is no larger than cherries. We have not mentioned another most important benefit, namely, preventing the exhaustion of the tree by overbearing.

PEACH YELLOWS.

We are favored by the experiment department of Houghton Farm, Mountainville, N. Y., with the results of an elaborate investigation into the cause of peach yellows, by Prof. D. P. Penhallow. In the course of this investigation the bark and wood of twenty-two species of fruit and forest trees were examined, in order to determine their chemical and physical condition, both in health and disease, at different seasons of the year. As the result of these investigations, Prof. Penhallow concludes that the disease known as peach yellows is not due, as has been supposed, to insects, or to fungoid growths, but rather to deficient or improper nutrition, involving an excess of lime and a want of potash in the wood and fruit, together with an abnormal proportion of certain other constituents. As a remedy, thorough cultivation is urged, and the use instead of stable manure, of a chemical fertilizer containing, for each acre of land, 25 pounds kieserite (crude magnesium sulphate), 100 to 150 pounds muriate of potash, and 450 pounds of dissolved bone black. Diseased trees

treated with this formula by Dr. Groëssman, of the Massachusetts Agricultural College, have been restored to perfect health, and it would seem worth while to give it a thorough trial.

The leading indications of this disease, obtained from observations for more than half a century, have been premature ripening of the fruit with purple discolorations of the fruit the first year, and small wiry shoots, a sickly appearance, and death the second year. These are the same indications that have been recognized by observers generally east and west. But the disease appears to vary much in virulence. Sometimes when brought by contagion into regions where general health prevailed, it has been confined in its attacks to a few trees only; and if these were promptly removed root and branch, it has spread no further. In one instance, after killing a few trees, it ceased without care being taken to check it. In all these instances the same distinct indications were present. In a more virulent form, it has swept through large orchards, and destroyed most or all the trees. We have known it during seasons of general prevalence, to attack single trees miles away from any known existence of the yellows previously; but whether it broke out spontaneously, or whether it was brought miles in some unknown way from diseased trees, was not determined, and it would be nearly impossible to ascertain without repeated observations.

FLOWERS.

Down by the mill, down by the mill,
Through all the summer hours,
There they grew, and grew, and grew,
Red and white, and purple and blue,
My beautiful, beautiful flowers!
Down by the water, bright and still,
Set like sentinels round the mill,
My beautiful, beautiful flowers!

There they grew, and there they stood
Together, two and two;
And some had hearts like a drop of blood,
And some like a drop of dew;
Down by the mill, down by the mill,
Through all the summer hours,
There they swung and there they swayed,
Like spots of sunshine over the shade,
And over the waters, cold and still,
My beautiful, beautiful flowers!

And some had slippers of yellow gold,
And some had caps of snow;
And some their heads held high and bold,
And some their heads held low;
And so they stood up side by side,
Meek, and mournful, and modest-eyed,
Through all the summer hours.
Down in the meadow, gay and green,
Like bridesmaids standing around their queen,
My beautiful, beautiful flowers!

O! to see them bloom and blush,
Was the sweetest show of shows,
The Daisy, under the Lilac-bush,
And the Violet, by the Rose!
Down by the mill, down by the mill,
Through all the summer hours,
Some so high, and some so low,
But all as fair as fair can grow,
Down by the water, bright and still,
My beautiful, beautiful flowers!

O! the little maid of the mill,
That dazzles and deceives:
With a head as bright as a Daffodil,
And a hand like the Lilly-leaves,
She it is that makes them grow,
Through all the summer hours.
They with cloaks of speckled dyes,
And they with hoods about their eyes,
Meek and modest, and high and low;
She can tell, if tell she will,
Why they dazzle down by the mill,
My beautiful, beautiful flowers.

Alice Cary.

A correspondent asks whether it is best to sink roses and geraniums in pots in the ground or transplant them outright, and is answered as follows: "It will depend somewhat on the subsequent disposition of the plants. If it is desired to have the roses bloom in winter, grow the plants in pots, sink the same up to the rim. Once in every few weeks take up the plant, and if, on examination, the pot is full of roots shift to one of a size larger; from six to a seven inch, for instance. Keep in the shade a few days and again sink the pot. If this is done, say three or four times during the summer, and all buds nipped off as they appear, by fall this plant will be in splendid condition to take into the house, where it will bloom all winter."

We quote the following from Dr. Beal: "I am often asked, 'What ails my plants?' and the answer in many cases is, 'You are too kind to them.' It is full as easy to drown a plant as to drown a cat, to say the least; and my advice is to give water only when it is needed, and to use judgment rather than regularity. The idea that plants must be watered every day any way, is a false one. Give them water when they are thirsty, the same as you would yourself."

CUTTINGS FOR AUTUMN.

Now is the season to prepare for the window garden. Cuttings will strike root very rapidly when filled with sap, and young geraniums, fuchsias, begonias, etc., will flower more freely than those which have bloomed all the summer. Select the cuttings from fresh shoots, which have not bloomed, if possible; nip out all the buds, and pull off the lower leaves, leaving only two or three on each. Put them into pots or boxes of wet sand, and keep it moist by wetting thoroughly morning and evening. Shade from the sun for two or three days, and then from noon-day heat until there are signs of growth. If the leaves drop, that is a token that roots are forming; if the leaves dry up on the stalk, it is dying. In three weeks there will be enough roots formed to make fine plants, and they can be transplanted into three-inch pots. Lifting a good quantity of sand with their roots when they are put into the pots, will prevent wilting. Use rich garden soil, or buy potting soil of the nearest florist. Plant the cuttings very firmly in the soil; water well, and shade from intense heat for two or three days. Pinch out all bloom buds which appear until October or November, and then let them grow, and you will have a fine display of flowers all winter, and be much better satisfied with the winter garden than if you had depended upon old plants lifted from the garden.

NEW CARNATIONS.

The best colored carnation I have at present is President James A. Garfield, a seedling raised by Messrs. Breitmeyer & Sons, of Detroit. The plant is very robust, and proves to be the best for winter blooming of all colored sorts, on account of its sweet scent and very large flowers, it being double the size of other carnations. In every way this carnation is perfect, and I am sure in a short time it will take the place of the kinds now used for winter blooming. In fact, there cannot be too much said in praise of this carnation. The color is a rich vermillion. This firm raised another good carnation which they named Mrs. Garfield. The color is like a Chinese pink.

PANSIES.

Pansies are plants that do not like to be hurried in their growth. No amount of heat will make them "hurry up," but will have quite the contrary effect. It has been found the best plan of all to sow seed in a pot or box in the fall. A very slight covering of earth is sufficient for them. They need keeping moderately damp until they are sprouted, then, when large enough, transplant to where they will have more room to grow. Through the winter a temperature but little above freezing will do, especially if not wanted to bloom until planting out time comes which to the pansy is as soon as frost has gone for good. A little sun heat in spring soon brings the flower buds.

STARTING PLANTS.

I have never failed to slip plants with success since I was told that clear sand must be used. I presume I had heard of it before, but paid too little attention to it. In this way I can be almost certain of good plants when I can secure a slip from any admired variety, which I do not have in my collection. When well rooted transplant to good soil, which is too rich at first for the slip.

I find it a good plan to sow small seeds like begonia, etc., on a very soft brick, dug out enough to hold say one-quarter of an inch of soil. Place the brick in a pan of water. The brick draws moisture enough to keep the soil in a nice condition. To this the editor adds: "This is also a capital way to raise ferns, orchids and other fine seeds. Sown on a shallow brick, set in a pan of water, they will be almost sure to grow, the only care required being to see that the water is always kept in the pan. When done in the usual way these fine seeds are sure to be washed away by the watering pot, no matter how carefully the watering is tended."

ROSES IN WINTER.

In order to protect tender roses properly during the winter season, they should be pegged down to the ground as close as possible and covered up with six or eight inches of leaves or rough litter; over this place some evergreen branches in order to prevent the leaves from being blown away. This covering should not be applied too early, not until hard freezing weather sets in, say from December 1st to 8th, in this latitude is soon enough, for if the covering is applied sooner the shoots may be smothered and destroyed by decay, a certain result of too early covering. In the spring this covering must gradually be removed, a portion about the middle or end of

March, and the remainder about the 10th of April, according to the season.

HOW TO PACK PLANTS WHEN TRAVELING.

Many of our readers in their summer sojournings by shore or mountain, will desire to carry home some floral relics of pleasant days, and by the following simple method they can be easily transported:

All that you will need is a piece of cotton cloth, colored or white as you prefer. Take up the plants so as to leave some soil about their roots, and if they are thoroughly wetted before removal, the earth will cling tightly to them and keep them from wilting. Tear off a strip of the cotton and wrap it closely around the earth and roots, leaving the branches exposed. Cover with half a dozen thicknesses of the cotton and pin it tightly in place, or sew the ends together. Put the roots and cotton into a dish over night. Next morning wrap up in a dry cloth, and you can pack the plant in your trunk or in a basket, where it will go safely without any injury to its roots, and if they are wrapped up in the cloth for a week or ten days the plants will come out fresh and fair. Seaside and mountain ferns can be transported in this manner without any injury to them; also all kinds of garden and house plants. When unpacked, place the roots, still in the cotton, into a little warm water, and give them a good bath for an hour or more, and then transplant them at nightfall, and shade for a few days from the hot sun, and keep well watered nightly.

S. O. J.

CARE OF ROSES.

The inquiry refers to the rarer varieties, and more especially to the Hybrid Perpetuals. The duration of these will depend greatly on the treatment they receive; a rich soil with free growth and the needed pruning at the proper season prolonging the life of such plants many times beyond the brief period accompanying neglect. In answer to an inquiry on this subject, H. B. Ellwanger has kindly furnished us the following remarks: "Under good management some varieties of Hybrid Remontant roses will live twenty-five years more, while others do not last more than five or ten. Varieties like Louis Van Houtte, Marie Baumann, Horace Vernet, Egeria, etc., are very delicate in constitution, and are generally short-lived; while kinds like Baronne Prevost, Jules Margottin, Alfred Colomb and Anne de Diesbach may outlive the one who plants them. Rather severe pruning is necessary if we would get the most from our roses, and also great care in keeping off insects."

DIRECTIONS FOR PROPAGATING THE ROSE.

“Take a young branch, cut a slit just below a leaf-bud, put the branch through the hole in a common flower pot until the slit in the bark is inside the pot, then fill the pot with sandy soil, set it on the ground, bending the branch and pinning it down without breaking; keep the pot well watered and the branch will root in a few weeks, then cut outside the pot without disturbing the roots. The large white rose and many others that do not root easily from a slip, can be propagated in this way, as can, also, most shrubs and woody plants. Of course it will be understood that the branch should be pushed upward until several inches are above the rim of the pot, and the earth pressed tightly around it, the same as though potting any ordinary plant. The point to be observed is to leave the branch unsevered, so that it may draw strength from the parent root, until its own roots are started. Leave it undisturbed in the pot in the cellar until the next spring, then set where it is to remain.

NEW HYBRID PERPETUAL ROSE—MARSHALL P. WILDER.

This is one of the new roses of the late Mr. Ellwanger from seed of General Jacqueminot. According to Messrs. Ellwanger & Barry, it is of vigorous growth, with healthy foliage; flowers large, semi-globular, full, well formed; color cherry carmine, much like a light colored Marie Baumann, or a shade deeper than Marie Rady, and very fragrant. In wood, foliage and form of flower, it resembles Alfred Colomb, but the seedling excels that famous variety in vigor, hardiness and freedom of bloom. The past season it continued to bloom profusely long after the Remontants were out of flower. In brief, it may be described as an improved Alfred Colomb, and as good a rose as has been raised by anyone. It is undoubtedly the best American rose yet offered, and the finest of its color.

LILY OF THE VALLEY.

The Lily of the Valley is quite hardy in all parts of the country, but likes a cool rather than a warm exposure, and if possible it should have a slight shade. Naturally it grows among shrubs and low trees, from which it receives some shade and shelter, and in planting it we should, if possible, give it a location imitating its natural site. In preparing a bed for it, if the material were at hand, we should mix some leaf-mold with the soil, but it usually succeeds in most soils without special preparation.

CHINESE WISTARIA.

The Chinese Wistaria is a woody plant with a perennial stem, like the Virginia Creeper, that increases in size with age. It is hardy in the Northern States and the Southern portion of Ontario, receiving injury by the cold at the end of its shoots only in the most severe winters.

Perfectly double flowers can not produce seed, since all the reproductive organs are converted into petals. Semi-double or partially double flowers may produce seed, and these flowers possibly may be self-fertilized or may be fertilized by other partially double or by single ones, and in either case may form seed, a considerable proportion of which will produce flowers more or less double. Or single flowers fertilized by semi-double ones will produce seeds capable of similar results. Unusually large and vigorous plants are not particularly favorable for the production of seed, but rather, particularly unfavorable; plants of medium vigor, neither stunted nor forced into rank growth, are best. The raising of seeds that will produce double flowers is an art that requires much experience to enable one to practice it successfully, and nearly every kind of flower requires a peculiar and special treatment.

PANSIES FOR BEDDING.

My neighbor, Mr. Beard, an enthusiastic horticulturist, grows the finest Pansies that I have ever seen. A few months ago the Massachusetts Horticultural Society awarded him a silver medal for his Pansies. He sows his seed in August, and grows his young plants in cold frames, which are well wrapped up in winter by a bank of litter with a board over it around the frames, and straw mats with light wooden shutters over them, over the sashes. His Pansies keep growing all winter long, begin to bloom in January or February, are at their best in March and April, and by a little shading from strong sunshine, and lots of water should they need it, they bear their blossoms copiously till June arrives, by which time their blossoms, on account of the excessive heat, become too small to satisfy his taste, then every plant is rooted out and thrown away. The soil he uses is fresh loam, with a heavy addition of old rotted manure and leaf mould. Last spring, in front of his house, in addition to his beds of spring flowers, were vases filled with pansies of a size and richness so uncommon as to elicit the admiration of the whole neighborhood, and sow the healthy seeds of emulation. For two months before the advent of geraniums and petunias we can thus enjoy our pansies. Connoisseurs sometimes perpetuate the finer pansies by

renewing them from cuttings every year, but so very fine is the Lemoine strain, that pansies from cuttings seem a waste of time.

PRESERVING CUT FLOWERS.

Different flowers require a different mode of keeping; for instance, rose buds from the carnation. I have found by experience that all flowers, after they are cut, in order to retain freshness, should be kept in a cool place, and away from the air as much as possible.

I have seen handsome cut flowers arranged in a vase or basket set in the front window, with the window raised and a full current of air blowing upon them, which would soon cause them to droop and hang their heads. By all means do not raise the window on cut flowers, the air will cause them to wither sooner than the heat.

Should you have a bouquet or a basket, see that the flowers are kept well sprinkled with cold water through the day, and at night before you retire have your basket or bouquet put in some air-tight vessel, and placed in the coolest part of the house; be careful and do not put it where it will freeze. Keep it in a temperature of from 40 deg. to 45 deg.; cover the flowers with well moistened paper or a very thin cloth, and you will find that the flowers, which were wilted and hanging their heads the night before, will have freshened up and look nearly, if not as well, as they did when received from the florist.

A GROUP OF CANNAS.

Few plants have undergone greater improvement within our recollection than the Canna. Formerly we had only the old "Indian shot," (*Canna Indica*), a handsome plant but small in stature and in foliage. The introduction of other species, and numerous hybridizings and crossings have given a long list of named varieties. Some of these grow six and eight feet high, with ample foliage. Besides there is a great variety in the color of the leaves, and some have showy flowers. There is no more effective ornament for a lawn, large or small, than a group of cannas. The named varieties may be purchased of the florists. If one does not care to be at the not very great expense of purchasing plants, he can raise them from the seeds. The seedsmen now offer seeds of good varieties, and if sown early they will make good sized plants this season, though not so large as may be grown from the roots another year. The seeds should be scalded and sown in a hot-bed or window-box, and as soon as they crowd one another, transplant to give them plenty of room. When the weather is quite warm, set them out in rich soil, twelve or fifteen

inches apart, to form a circular or oval group. The first summer make note of their relative height and colors, as a guide in future planting. In autumn, if there is likely to be a frost, cut down the cannas before they are killed. Take up the roots, let the surface dry in the sun, label them with height, etc., pack in dry sand and store where they will not freeze.

PLANTS FOR THE WINDOW GARDEN.

Most housewives try to raise too many kinds of house plants. Four or five good, strong plants of geraniums, which will make a compact show in the window, are usually preferable to a single plant of each of half a dozen different varieties. "Variety is the spice of life," however, and, to a certain extent, it is true of the window garden. Enough variety can usually be obtained from six to eight different plants in an ordinary window. For winter blooming, the following eight plants will be found desirable: One rose geranium, one heliotrope, three Chinese primroses, one sweet alyssum, one calla, two Azalea Indica, one English or German ivy, one rose, either Agrippina red or Hermosa pink. The Chinese primulas are especially desirable for winter, as they will thrive with less light than most other plants. The roses need much light, and, unless it can be given them, their place had better be filled by primulas or other plants. Bouvardias, if well grown, are usually favorites, and, as they endure the dryness of living rooms, one plant might be substituted for a rose or primula in the above list. It has been our experience, however, that housewives do not have the best of success with bouvardias. Fuchsias are desirable for spring blooming, but, as usually managed, they are not a success. Azalea Indica is a fine window garden species, and under ordinary treatment will give a mass of bloom during the entire months of March and April.

PLANTS DAMPING OFF.

The damping off of plants is mostly attributed to an excess of moisture, either in the ground or in the air. But from what we have observed we are led to the conclusion that it is frequently caused by a lack of air to the roots. For instance, take a bed of coleus that have just been started from cuttings, in fine unwashed sand. They will grow finely for a week or two after starting roots, but unless duly potted the soil or sand in the bed will become packed, and the plants will begin to damp off at the surface. If left undisturbed one after another will drop over, until every plant is gone. You may withhold moisture from the soil and neglect to shower the plants, until

the earth and atmosphere in the greenhouse are quite dry, but it will be of no avail. The plants will continue to disappear as fast as ever. Now, stir up the sand thoroughly between the rows, so as to admit the air freely to the roots, and use as much water as you wish, if the drainage is good, you will find that the plants will cease damping off and begin to grow. We have tried this same experiment with other plants to keep them from damping off, and it has worked successfully in every case. We admit that a humid atmosphere and an excess of moisture in the soil are apparent causes of plants damping off; but may not the true cause be found in the fact that this humidity and moisture prevent the free access of the air to the roots and foliage to such a degree as to affect the health of the plants in this way? We suggest this idea in the hope that some of our readers will relate their experience and afford more light on the subject.

ROSES—WHAT VARIETIES TO PLANT AND HOW TO GROW THEM.

As the time for planting roses is at hand, it will be well for those who contemplate growing them to select such as they desire and order at once, as the stocks of finer varieties are frequently exhausted early, leaving nothing but inferior plants to be supplied when the season is well advanced.

The first important consideration is the selection of varieties adapted to the various sections. For the Northern and Middle States the Hybrid Perpetuals are the most desirable, as nearly all are sufficiently hardy to withstand severe winters, and with proper attention to the recommendations of practical growers such kinds may be selected as will give an abundance of beautiful blossoms from June to November. In making selections, four requisites should be borne in mind: First, vigor of growth; second, hardiness; third, freedom of blossoming; fourth, color and fragrance.

Among the many hundred varieties comparatively few possess all these necessary qualifications. Among the best are Alfred Colomb, carmine; Baronne Prevost, bright rose; John Hopper, bright rose; General Jacqueminot, crimson; Marie Baumann, crimson; Wilhelm Kœlle, carmine; Marguerite de St. Amande, rose; Jean Liabaud, very dark crimson; Louis von Houtte, deep crimson; Prince Camille de Rohan, dark crimson; Baroness Rothschild, pale pink; Mabel Morrion, white; Anne de Diesbach, carmine; Pierre Notting, crimson and violet, and Francois Michelin, carmine rose. Many fine roses of this class might be mentioned, but they are not sufficiently removed from those enumerated to be desirous in small collections.

Among the June or Summer roses are several old and highly prized varieties, which, although blooming but once a year, are worthy a place in every garden. These are George the Fourth, dark maroon; Mme. Plantier, white; Persian Yellow, deep yellow, and Mme. Hardy, white.

Moss roses also claim a place in our gardens, and well do they deserve it, for what is more beautiful than the buds of Crested Moss, Gracilis or Laneii? Of this class select Glory of Mosses, pale rose; Laneii, red; Crested Moss, pink, and Captain John Ingram, dark crimson.

Again, we have another class called Hybrid Noisettes. These are mostly white, have small flowers of good form and are very free bloomers. Among the best are Coquette des Alpes, Coquette des Blanchés and Mme. Noman, all of which are white.

In the new class, known as Hybrid Teas, we have that queen of roses, La France, of a pale, silvery rose tint, deepening toward the center, the sweetest and most delicious of them all. Its fragrance surpasses that of any other rose but its coloring is difficult to describe. Though tender, it can be wintered by giving it an extra blanket and it repays, ten fold, any extra care bestowed.

Of climbing roses, there are few to be desired. Mention may be made of Baltimore Belle, white; Prairie Queen, pink to red; Gem of the Prairie, deep rose or pink. Climbing Jules Margottin is properly a Hybrid Perpetual, of stronger growth than its parent, Jules Margottin, and worthy of a trial; color, carmine crimson, suffused with pink.

ARRANGING CUT FLOWERS.—BY CHAS. H. MILLER, PHILADELPHIA.

The subject of cut flowers concerns us all, and a few hints as to the arrangement of them may not be out of place. Much of the beauty of these lovely gems is often lost through a want of taste in this respect, as for instance when stiffly arranged in a bouquet, ring after ring with little intervening foliage, and no graceful form of tendrils, leaf or bud allowed to break the monotonous circle. It is not by size, but by expression of color and shade that we have to measure, and thus the effect of a group of flowers prettily and harmoniously arranged may be completely spoiled by being multiplied in number or increased in size; that is, by repeating the same flower or adding to the same group.

A safe general rule for guidance in the arrangement of flowers is, if there are many flowers use delicate shades; but if the flowers are few and the foliage among which they are laid is dark, use shades

of much deeper tones. In the arrangement of cut flowers for the parlor, side-board, or dinning-table, much depends on the shape and color of the vessel in which they are placed. The white of glass or of Dresden china vases is so intense when placed in artificial light that the pure white flowers would scarcely look their whitest in them. Very light flowers are also likely to look darker by the striking contrast. A quantity of green is therefore the best fringe for such dishes, and ferns and smilax are the most suitable. In all floral arrangements, whether for vases, bouquets or designs, it is better to put in the green first and gradually working them up to the required brightness, always remembering that the collection had better lack a flower than have one too many, the object being to form a graceful, refreshing and suggestive picture.

The art of constructing bouquets, and the classification and arrangement of flowers for the table, cannot be communicated in writing. It requires as much taste, skill and practice to become a good artist in the making-up of flowers as it does experience to become a good gardener.

But to proceed with the subject of the arrangement of flowers in general, the main feature being to show each flower separately and not a quantity crowded together, forming a mass of petals, but that each flower may be seen reposing quietly among the green, giving to each bloom an individual character. A few colors in a bouquet have a much prettier effect than a mixture of many colors. Red, white and buff go well together with green between. A few rosebuds with their own leaves, and a little green smilax, make a bouquet much more handsome than one composed of many kinds of inferior flowers. These remarks hold good in the arrangement of designs for the table.

One of the most beautiful table designs I ever saw was a large open dish of lycopodium, a few white and pink rosebuds, with a handsome dracæna in the center. The effect produced by the fresh green moss with the gay leaves of the dracæna was simply beautiful.

FLORAL DESIGNS AT THE NEW YORK HORTICULTURAL SOCIETY'S DECEMBER MEETING.

A premium was offered for an original design of cut flowers, and it was awarded to Mr. A. LeMouet. It represented a flower garden, with a balloon arising therefrom, with the words "Off on a tour" upon it.

The second premium for "original designs" was awarded to

Long & Houghton, and represented a Roman chariot drawn by two doves, a rather heavy load for the feathered creatures.

The first premium for table design was awarded to Hautt Bros. It represented a round table with a design of choice roses, chiefly of La France, in the center, which was surrounded by a wreath of red carnations. The edge of the table was left entirely clear for plates and other things.

In floral wedding gifts, the first premium was awarded to Charles Carlin. It represented a wish-bone on a stand, which might lead to sad reflections if the couple did not get the ones they had wished for when the original bone was in service.

The best funeral design to A. LeMouet representing a mausoleum with gates ajar. For an original design A. LeMouet also had the first premium; represented a clock with words around it, "The hour is come." Second premium to Mr. Neal, "Rock of Ages." This was conceded to be much the handsomest design, but could not be regarded as original. This was the case with a broken wheel at the fountain, and there was a curious original fancy in a globe with wings for flight attached.

In cut flowers the most enchanting were baskets of glorious and deliciously scented orchids.

In cut roses the only novelty of good promise was the Southern Belle, a seedling of Mr. May of Albany. It was after the style of *Souvenir d'un Ami*, a French word equivalent to our "keep-sake."

POT ROSES.

A market-grower in the neighborhood of Paris has a method of treating pot roses which is said to ensure their flowering a second time, with a vigor and profusion almost or quite equalling the first display. By the system followed the plants were subjected to a forced rest as soon as the flowers fade, which is accomplished by keeping them under cover, and for a time almost entirely withholding water. In the course of a month or so they are pruned, shaken out and fresh potted, or simply watered with manure water, when they start away into growth again, and bloom finely at the close of the summer or early autumn, when roses are scarce. In this way the plants are in blossom at those seasons of the year when the outdoor plants have either not commenced to flower or are nearly past, and are resting when they are least needed.

THE ROSE.

Among the Hebrews, the bridegroom as well as the bride, wore a crown of roses, of myrtle, or of olive. Mythology assigns to the rose the most illustrious origin. At the moment when Pallas came out of the brain of Jupiter, the earth produced the rose, that delight might follow in the wake of wisdom. White at first, the poets have not quite agreed as to what it owed its many purpled hues. We are told by some that the exquisite Adonis was mortally wounded by a boar, and that his flowing blood fell on the roses, and colored them forever. According to others Venus ran to protect him, and the thorns and briars tore her lovely skin, and the purple drops fell on a white rose, dyed it, and conserrated it forever in her honor. Such a circumstance was scarcely necessary to make so perfect a flower sacred to the goddess of beauty. Some authors say that in the midst of an Olympian *fete* the goddess Hebe spilled the embalmed vermilion nectar, and that the white roses spread their petals to receive the perfume and color.

VEGETABLES.

EXPERIENCE WITH PEAS.

Here is my experience with a few varieties of peas grown the past season, sown as soon as the ground was in a suitable condition to work in spring; soil a sandy loam; in fair condition but not rich. The ground was plowed and harrowed, and marked out with the plow. The peas were planted about three inches deep, and all were planted in one day. The soil was manured with Mapes' A Brand; the quantity was not measured, but I suppose the application was at about the rate of 1,000 pounds per acre, sown along the furrow, and the peas were planted on it without any mixing of the soil. The peas were dropped about one inch apart. The varieties ripened as follows:

June 11, Landreth Extra Early, height, 42 inches. June 13, Kentish Invicta, height, 48 inches. June 14, American Wonder, height, 12 inches. June 15, Blue Peter, height, 12 inches. June 15,

McLean's Little Gem, height, 20 inches. June 15, Premium Gem, height, 24 inches. June 20, Advancer, height, 36 inches. June 22, McLean's Dwarf Prolific, height, 36 inches. June 22, Eugenia, height, 48 inches. June 24, Bishop's Dwarf Long Pod, height, 48 inches. June 24, Forty-fold, height, 72 inches. June 24, Champion of England, height, 72 inches. June 24, Dwarf White Marrowfat, height, 48 inches. June 26, Dwarf Blue Imperial, height, 40 inches. June 26, Day's Sunrise, height, 70 inches.

The Extra Early were all ripe nearly at one time, so that the crop was nearly gone by the time the Invicta commenced to ripen. The Blue Peter is a very good cropper for a dwarf; so are the Dwarf Marrowfat and Day's Sunrise especially productive. The Advancers were large and of superior quality. The cultivation was mainly with the horse, and was not very laborious. There is no product of the garden that can be more easily raised than peas, and none more acceptable, and with horse and plow, enough can be planted in a couple of hours to supply the largest farmer's family during the season, and by using early and late varieties all can be planted at one time. Peas should be sown early, so as to get their growth before the hot and dry weather comes, and in this section late peas get full of bugs or weevils.

I. J. BLACKWELL.

OUR BEST TOMATOES—BY MANSFIELD MILTON.

I have for several years been growing the best and newer varieties of tomatoes. I grow for market, and therefore have a good chance of knowing the most profitable and best selling kinds. The earliest tomato I have this season, of smooth shape and suitable for market purposes, is Hathaway's Excelsior. It is early, productive, smooth and bright of color. Canada Victor is early, but is too wrinkled for my growing. Acme and Paragon are the most perfect tomatoes I know of. The Acme will sometimes rot, but it is very fine in shape and quality. Some people object to the color, but this is only with those not used to it. The Paragon is almost perfect. It is smooth, large and good color, but not quite so productive with me as the Trophy, which is fine when it ripens perfectly to the stem, but it will keep green around the stem when the other part is perfectly ripe. Some people are under the impression to get early tomatoes the ground has to be poor, but I do not believe it. With me I get the earliest ones on well-exposed, well-drained, rich soil, having an eastern or southern exposure.

A TEST OF FIFTY-FIVE TOMATOES.

During the past season I made a trial of fifty-five varieties of tomatoes, six plants of each, for the purpose of testing the respective characters on the same land, and under the same system of culture. The plantation was on a gentle slope facing south, thus obtaining a warm aspect, with a light, gravelly soil that absorbs the rains as they fall. The ground, which had previously been in clover, was plowed deeply, and well coated with rich short manure. The plants made a good growth, but not over luxuriant, to the detriment of the crop of fruit. The seeds were sown in rows in a hot-bed the last week in March, and when about three inches high were pricked out into a cold frame, and remained until all danger of frost was past. They were then carefully lifted and set out in their final positions in the open air. Altogether the experiment proved an entire success, and was full of interest as well as practical value to the writer.

Many of the varieties, however, were identical in every particular, and the greatest portion not worthy of a place in any garden. Livingston's Perfection and Favorite were especially deserving of praise. The fruit was large and solid, very even croppers, and no cracking noticed. Of the two, the latter was rather larger, and consequently more showy. The Trophy held its own nobly, and is difficult to surpass when grown properly. Among early varieties, I was pleased with the new Mayflower. It is a decided improvement on the Early Acme, a tomato that rotted badly in this collection. The Beauty, sent out by Mr. Buist, of Philadelphia, the past season, is one of the very finest on account of large size, solidity, and a brilliant scarlet color.

The Tilden, one of the very first of our improved tomatoes, rotted badly; its day is evidently past. For earliness Hathaway's Excelsior was a success, but it is too small; and Early Canada Victor, another of the same class, is too uneven in outline. Extra Early Richmond, as its name implies, led the season, but it is of little value after the other kinds are ripe.

Among the fairly good varieties, but not better than those heretofore mentioned, I would place the New York Market, Queen, Island Beauty and Paragon. The newer Vick's Criterion and Essex Hybrid are pinkish in color, and on that account will never prove popular. I have preference for yellow tomatoes, notwithstanding the general verdict against them; and in the entire list Yellow Tro-

phy proved the best with me. In fact it cannot be excelled for evenness of outline, solidity, fine flavor and productiveness. When fully ripe it has a rich golden tint. The new English Green Gage is rather small, but an enormous cropper, pale yellow, very solid, round as a General Hand plum and altogether desirable. The White Apple is too poor in color, and inclines to decay. For preserving purposes our list is certainly ample, and all the varieties tested did exceedingly well, from the miniature Little Currant up to the larger sizes. Red and Yellow Plum or Pear are particularly desirable.

JOSHUA HOOPES.

NEW CELERY—WHITE PLUME—BY PETER HENDERSON.

I send you a few bunches (put up New York market fashion) of our new celery "White Plume." If I mistake not, this will open an entirely new phase in celery culture. It "sported" in the vicinity of Newark, N. J., some three years ago from what is known as the half dwarf variety, showing a variegation of creamy white, mainly confined, however, to the center stalk and leaves of the plant, looking as if nature was meeting art half way; for as we know in all other celeries, this whitening of the center so as to make it fit to eat, is only obtained by the slow and troublesome process of "banking" or earthing up, while in the "White Plume" celery no work is necessary other than hoeing or ploughing sufficient earth to the rows, so as to straighten it.

Another advantage in this new variety is, that not only the stalks are white and fit for use, but the leaves also, giving it somewhat the appearance of a bunch of white feathers, and hence the name given to it of "White Plume." This ornamental feature will be of great value, as it is well known that celery at our best hotels is nearly as much valued for an ornament for the table as for use, and in this we have the rare combination of these qualities.

There is only one drawback to this valuable new celery. Its natural tendency to white prevents it keeping late into winter, and it usually would not be safe to keep it later than the middle or end of January, in such sections of the country where it has to be preserved by putting it away in the trenches. But as the greatest quantity of celery is usually used in early winter and during the holidays, for this purpose no other variety is at all so valuable as "White Plume;" and when it is known that at least three-fourths of the labor is saved in growing it, it may well be believed what a boon it will be to all cultivators of this vegetable. To the greater number of amateurs heretofore, the great labor entailed in growing

celery has prevented the attempt, but when it is known that it can be now grown as easily as cabbage or lettuce, there is but little doubt that the area of celery culture will be greatly extended.

New York City.

[We are much indebted to Mr. Henderson for the information about this singular sport, which will introduce a new era into the history of celery culture. Self-blanching celery will indeed be a labor-saving class. The celery was remarkably solid and crisp, no trace of pithiness, and no waste. To our taste it was not as nuttily flavored as the best kinds of the old-fashioned class; but this only means that the way is open for still further improvements.—*Ed. G. M.*]

EARLY PEAS.

Try Carter's Extra Early peas, Premium Gem, you will never grow any other. With me it is three days later than Philadelphia Extra Early, and a week earlier than American Wonder. I have tried nearly every kind, and find this the best.

GEORGE LEHN.

GETTING POTATOES EARLY—BY EXPERIMENTOR.

Some years ago I conceived the idea of planting my potatoes with shoots to them. Probably the sprouts suggested the idea, at any rate I carried out the plan, and have been so well pleased with it that I have followed it for three years. A few weeks before planting time I select my seed potatoes, and set them in a warm place to sprout. By the time my ground is ready the shoots are about three inches in length. The potatoes are handled carefully so as not to break the growth, and cut up in suitable sizes, as in the ordinary way. One strong shoot is left to each piece. The sets must be put into the ground carefully, of course, or the shoots will be broken off. As growth commences at once, the green tops show in a few days. There is easily a saving of two weeks time at the start. Those who have rather low ground, which cannot be worked very early in spring, as I have, will find this method will enable them to compete with their neighbors on higher ground with success. By July 10th, I was using fine Beauty of Hebrons, (an excellent early sort by the way,) planted April 25th. They were not then fully ripe, though the yellow tint in the leaves was getting quite perceptible. Generally the tops are dead at this date, but an unusually fine potato season kept them growing later this year.

MARKET.

PREPARING FRUIT FOR MARKET.

"Farmers are cheats," we heard a city man remark the other day, "I do not buy a basket of strawberries that has not the best and biggest on top, and when the peach season comes, I get a dozen or two of fine peaches at the top, while the rest of the basket is filled with small, green and gnarled fruit; they are all cheats." The very next day after hearing this remark, we were among the fruit commission houses, and in one place saw some young men, who had bought several crates of berries to peddle. They had a lot of smaller baskets, to which they transferred the berries from the larger ones they had bought, and as they filled these, they topped them with the largest berries with surprising dexterity. We concluded that all the cheating, in strawberries at least, was not done by the farmers. That there is much "deaconing" (the market phrase for topping) of peaches and other fruits, we do not doubt, yet the tendency is all in the other direction. Take peach-growers, for example, those who are regularly in the business, and expect to continue it, they strive to make their brand upon a crate or basket a guarantee of honest packing.

A correspondent of the *New England Farmer* says there is a growing disposition on the part of consumers, to seek after colored apples for use, in preference to those that are without color. A dealer remarked upon this point, that he could not account for the fact, but that it was nevertheless so; that with colored apples, and uncolored of equally as good, or superior quality, the colored would be taken every time. If this is a taste that is prospectively to be cultivated to any extent, it will demand the attention of farmers who are setting out new fruit trees.

The most experienced fruit-growers keep the room at as low a temperature as possible, without freezing. For home use, when fruit in the fruit-room is found to be nearly in eating condition, its removal to a warm room, to "finish off," will be found to greatly improve its quality. Early apples and pears, which, if left to themselves, will become mellow on the tree, should be picked before this takes place, whether for market or for home use. One soon learns

when the fruit is mature, by the ease with which the stems part from the tree. Such fruit will ripen in the packages in which it is sent to market. For home use, it may be had in the greatest perfection of both flavor and color, if ripened very slowly. We know of no better plan than to spread the fruit in a cool room, on a blanket, and cover it with another. The fruit can be daily inspected, and those that are just right for eating selected for the table.

“Very few farmers know what constitutes a first grade apple in city markets. In general, it may be said, that first grades should not be overripe; neither very green and undeveloped, as those which often grow in the center of a thick tree; should not be one sided or ‘scabby;’ not jammed or dirty. and, above all, not wormy. There are certain worm holes, however, which do not make an apple second-class, but they are not common. If the worm hole be recent, small, and through the apple from end to end, it does not usually lessen the keeping qualities or appearance. If the ‘blow end’ of the apple be filled with chips, however, and the portions adjacent to the openings of the worm hole be red and discolored, or if an opening is made anywhere in the side of the fruit, then the apple is second-class. Apples apparently sound, but which have lain under the tree until they have become withered or dirty, are not first-class. Some uniformity in size among first-class fruit should be secured. Very small apples are apt to be green and immature; very large ones, especially if highly colored, are usually overripe and will not keep long. Baldwins and others, which are attacked by the dry rot, are second or third-class. No light, spongy apples should be packed with the first grade. As far as possible, first grades should have the stems on, and should be free from all dust and leaves. It may be true, that very few of the apples in an average orchard are first-class fruit, but it pays to pack those few by themselves, nevertheless. If not sorted, the whole crop will sell for second-class fruit. The fruit put upon the market by farmers as first-class fruit often contains much that will rank as third-class.

COMPARATIVE WEIGHT OF APPLES.

Some years ago when the daily papers were completely exhausted in exciting topics, they took pains to show how the poor denizens of large cities were robbed by heartless farmers who would always take the same price for a dozen small eggs as for a dozen large ones. The universal panacea for all evils, an appeal to the Legislature, was warmly urged, and we believe in some places laws were passed com-

manding eggs to be sold by the pound. The political excitement will be soon over, and something new must be thought of. How will an apple campaign suit? It must be borne in mind that a bushel of apples does not always weigh the same. Some apples are naturally denser than others. Ben Davis gives only 40 pounds to the bushel; Vandevere 43; Belleflower and Winesap 44; Rome Beauty and Bawle's Janet 47; Baldwin 48; Little Romanite 49. Besides this, a bushel of small apples of the same kind weighs less than a bushel of large ones. Here is a serious matter for the plundered city man to think over!

GATHERING APPLES.

Once more the gathering and marketing of apples demands attention and care should be exercised in all the details. Picking is a most important item, and should be done before the fruit begins to fall. In fact, pick just as soon as it will answer to do so, for at this season a heavy wind-frequently blows off many of the finest specimens, rendering them only fit for evaporation or cider-making. When the trees are young or have low branches, let the pickers use a step-ladder six feet in height for gathering all within reach. Then go inside among the branches, and if any remain, secure them by carefully placing a ladder against the outer branches. A very good plan is to tie the strings of a common grain bag to one end of the bottom, and sling it over the shoulder, putting a stick in the top of the bag to keep it open. This will be found handier than a basket or pail. Besides when the fruit is put directly into a barrel, the bag can be lowered to the bottom and quickly emptied, without bruising the fruit.

If apples are intended for market, it is best to lay them in a pile on the ground for a week or more to sweat, and during this time all that have been bruised in handling will show the injury and may be discarded. Always use clean barrels, and if possible new ones; examine the inside and remove all projecting nails or slivers that would injure the fruit; reject all bruised, gnarly or wormy specimens; carefully put in the bottom layer; fill the barrel, gently shaking meanwhile; lay the last course evenly, and so that it will take considerable pressure to bring the head in place. Drive the hoops firmly down, and if it is to go a long distance before being opened, three six-penny nails should be driven through each top and bottom hoop, in such a way that it will secure the ends in place, as barrelled fruit receives rough handling by the transportation companies. Mark the head of each barrel with the variety it contains, and never put

but one variety in a barrel unless the different sorts are very similar in form and color, and even then it is best to retain such mixed packages for home use. Remove any leaves or small twigs, which often cling to the stems of some varieties.

Apples intended for home use, or to be put in the cellar for a later market, may be placed in some open out-building as fast as gathered, and barrelled or placed in the cellar even after cold weather has set in. Thus managed the orchard is soon cleared, and swine may be turned in early to eat the poor, wormy and refuse specimens. Besides, when storing in the cellar the lateness of the season does not make it necessary to re-sort before spring, and as wormy or decayed specimens are removed they should keep in fine condition.

And now one word about varieties. If you intend to set new trees, or graft old ones, choose an apple that has some color about it, especially the winter varieties, for nine-tenths of them, after reaching the cities, are retailed in small quantities, and buyers, for some reason, will, five times out of six, choose a highly colored apple in preference to one of the same size and better flavor, if of a green or light color.

GATHERING PEARS.

Although this is not the season for this work, it may be well to allude briefly to the subject, as a dispute in discussion has recently taken place. The rule as the best time for gathering must vary with circumstances, but so far as any general rule can be laid down, it is to pick early pears a week or ten days before full maturity, and to allow late ones to hang as long as the weather will admit. Several of the early sorts, as for instance Clapp's Favorite, are prevented from rotting at the core by early gathering and house ripening. The later sorts, for example Winter Nelis, if not allowed to ripen well, will either wither or else decay before becoming mellow, or remain hard and not ripen at all. Justice has not been done to some winter varieties because they have not been allowed to become fully mature, or the season or locality has not favored a complete maturity. The past season shows the mistake which some have made by applying rules indiscriminately. Late summer and early autumn were so dry in many places that pears made only half a growth up to a certain date; then copious rains came and they began to increase in size. Many were gathered at this critical period, and as a consequence they are either wilting or decaying.

KEEPING APPLES IN WINTER.

The apple crop was not a large one this season, and therefore they should be well taken care of.

A moderately damp cellar, in which the atmosphere can be kept at a little above the freezing point is the best place, and where little or no decay can take place.

The late cold snap will no doubt catch some not properly cared for, and they will be frozen. If left undisturbed, and covered so as to keep them in the dark, and exclude the air they will thaw gradually and be but little the worse for it; but if handled and put where they thaw suddenly, they are done for. A barrel of apples, if the barrel is a tight one, may be frozen hard as wood for six weeks, and not hurt them a particle if allowed to thaw gradually and undisturbed.

There is quite a difference in the keeping qualities of some varieties as to how they are put away. For instance the R. I. Greening, if in bulk, will not keep at all, while if laid on shelves in a single layer, they will keep all winter. This may be the case with other varieties.

Some time since I saw an article in some paper where a man complained of certain varieties from young trees not keeping well, but thought that when the trees attained greater age the fruit would keep better. The very reverse is the case, for old trees in my orchard bear well, but they drop their fruit early, and don't keep even until winter, while from young trees the same varieties are finer and keep all winter. When a tree has dead limbs, knot holes where the water can enter, it would be vain to expect perfect fruit. Just as little can we expect well colored, and even tolerable flavor in a Jenneting from an overloaded tree, small, green and insipid, instead of fine flavor; fair size, and well colored from a tree that has a reasonable crop. More than half the time a Jenneting should have the crop thinned out, yet not once in ten cases is it done. S. MILLER.

ORANGES CHEAPER THAN APPLES.

Sydney Smith bewailed the wretchedness of existence "four miles from a lemon." There are thousands of families in this country who are many more miles from a lemon than that, and who, nevertheless, manage to pass a comfortable existence. But they may not know that in the seaboard cities, lemons and oranges are so abundant as to be cheaper than apples. All the winter long, the huckster wagons

have borne the legend "Lemons 25 for a quarter." In some cases 30 and even 40 have been sold for 25 cents. At one time Messina lemons brought only \$1 for a box containing 360. Oranges are more variable, but the Mediterranean fruit has been sold all along at 15, 16, 20, 26 or 30 for a quarter. Floridas have sold for 30, 40 and 50 cents and more per dozen, and Havanas at similar rates, and also at "16 for a quarter." While apples were quoted at from \$3.00 to \$6.00 pr barrel, Mediterranean oranges were quoted at \$1.75 to \$2.50 per box, and Floridas from \$2.50 to \$4.50 a half barrel. Of course as a rule the highest priced fruit is the largest and finest, but it is surprising how excellent the oranges are that the street venders sell. Another surprising fact is that whether the lemons are one cent each or five cents, lemonade remains the same price "all the year around," summer and winter.

ORNAMENTALS.

THE ASH AS A STREET TREE.

Dr. John A. Warder says: "In this prairie country one of the very best trees for street planting is the green ash. The size is just right, the growth when young is rapid, the form is easily controlled by judicious trimming, and the foliage is very neat and of a healthy green, which is nearly the same on both sides of the leaves. Then, too, the trees may be had at reasonable rates from any nurseryman. Whole blocks, or indeed whole streets, might well be planted continuously with the green ash, and produce a good effect."

WEeping WILLOWS.

Many of our people, in town and country, in all parts of the State, seem anxious to secure such fine specimens of weeping willow as they have known in their early homes, or the homes of their friends in the Eastern States.

Thousands of trees of the Babylonian, the Caprea and the Kilmarnock, have been sold from eastern nurseries at huge prices, but the beautiful specimens of weeping willows, except in a few favored localities, are not known on the prairies.

Yet it is the fault of our own nurserymen. The eastern trees are either not hardy enough for our climate, or the stocks on which they are worked fail with us.

Grafted at proper height on our native *Salix Nigra*, the Wisconsin weeping willow is not excelled in beauty or perfection of form by any of the varieties noted above. Our people have condemned it because grown from cuttings, it sprawls upon the ground. Graft it, as the Kilmarnock is worked at the east, on straight stems seven or eight feet in height, and it is not excelled in perfect growth, and will not fail to give satisfaction to purchasers. The willows and poplars can be successfully grafted by the merest novice in the art.

I wish to call attention to another beautiful weeping willow from Russia, known as *Salix Napoleonis*. As known on the lawns and in the parks of Northern and Eastern Europe, it makes a small tree with decidedly pendulous habit, attracting the attention of all passers on account of its purple-tinted and yet glaucous and shining leaves. For small lawns and along the walks of larger places it will prove a very valuable addition to our at present restricted list. Who will grow a stock of weeping willows?

J. L. BUDD.

SHADE TREES.

In selecting trees and shrubs for ornament one should look to the cut of the foliage and to its color. Trees with large, heavy and dull leaves give a sombre and melancholy effect, while those with small, finely cut and light colored leaves make a lawn look gay. Grounds planted exclusively to either of these sorts are not considered tasty. It is one of the problems of landscape gardening to contrive pleasing contrasts of large and small leaves, of light and dark, of rigid and lax, of sombre and gay foliage. A cut-leaved, weeping birch, may be taken as a good example of the light and gay foliage, and the black maple (*acer nigrum*) and the catalpa, as an example of the sober and heavy. Most evergreens belong to the latter class.

To those who trace everything to its money value, and who cannot appreciate natural beauty and ornament, a statement made by B. W. Steere, at a meeting of the Michigan Horticultural Society, may be interesting. A man in that region cut the trees which grew in the highway, and on the top and sides of a bluff. An eastern man, looking for a place to purchase as a home, would have bought this place if the trees had not been cut away, which spoiled the appearance and lost the sale; and he said to Mr. Steere that he would have given \$500 more for it with the trees than without them.

THE NEWER SHRUBS.

Mr. Strong said the Japanese maples, with their various hues, which are so much admired, do not withstand our hot suns. On Mr. Hunnewell's grounds, where they have both shade and moisture, they seem to thrive and are "superlatively beautiful." At Flushing, N. Y., they do not get from the frames to the open ground to any extent. They will not do for ordinary cultivation. The new azalea (*A. mollis*) from Japan, winters as well as the Ghent azaleas, and flowers superbly. Many new seedlings have been raised, which are reported to be suited to our climate. The Japan Red Bud (*Cercis japonica*) differs from our native species in being not so large as currant bushes, with flowers larger and richer; but Mr. Strong said nothing as to its hardiness.

Among the new evergreens which have proved hardy on Mr. Strong's grounds are *Retinospora plumosa*, *squarrosa*, *obtusum*, *filifera*, and *lycopodioides*, and these he regards of great importance for lawn decoration.

The single Japan rose (*rosa rugosa*) with several shades of color and rich rugosa leaves, is pronounced a very promising shrub. *Viburnum plicatum*, already well known, is highly commended. The panicked Hydrangea is thought to be finer than the common *grandiflora*, on account of its light and graceful trusses. The practice of cutting down to the ground the *ailantus* to secure new shoots, was recommended for producing palm-like effect.

For propagating shrub seeds are the cheapest and surest. If we are in haste, we must graft on strong and congenial stocks. The rarest evergreens are rapidly multiplied in this way. The stocks are started in pots, and when the sap is fairly moving side grafts are inserted into the dormant scions, and then packed away in a shaded frame in the greenhouse, keeping moist with sphagnum. In a few weeks there will be a large per cent. of established plants. Deciduous shrubs are increased by cuttings of the soft wood, in July or August, in boxes with three inches of soil and an inch of fine sand at the top, placed in shaded frames with slight bottom heat. A cheaper mode with many sorts is to make ripened wood cuttings in autumn, bury in bundles bottom ends up, sheltering from rain and hard freezing, and plant out in early spring. Cuttings may be taken from most greenhouse shrubs early in spring, and they will root readily in a propagating bed. This answers well for roses for winter-cut flowers. Our space has allowed only a brief condensed account of a part of Mr. Strong's valuable paper.

PROPAGATION BY CUTTINGS.

About the last of July is a propitious time for putting into soil cuttings or shrubs of all sorts, including roses and dwarf-growing evergreens. The young shoots are ripe enough then not to go into decay readily, and yet there remains enough of the summertide of growth to heal up the wound at the base of the cutting with soft callus from which extensions will protrude that will become active roots. But this takes place slowly, requiring months with the slower growers, and the art of the propagator consists: first, in selecting suitable half-ripe cuttings, and then in keeping them through all this time of slow, weak movement, unhurt by burning sun, or parching-wind, or leaching wet.

A corner shaded from full sun and wind is selected, and choice, fine sandy soil is used, with free drainage. The cuttings—two to six inches long—retain their leaves, and these must be prevented from wilting by retaining moisture about them until they have ceased their functions and ripened. For they digest and supply the organized material of which the callus and its projections are composed. A small bed of cuttings can be put in a trench or a board frame about six inches deep and so narrow that panes of glass can be laid across to retain moist air. Water can be given around this, as needed, so that the cuttings receive moisture without being drenched.

In damp weather the glass can be taken off, and if much loaded with condensed drops the panes may be turned. In larger beds a mere screen lath suffices if the leaves are gently sprinkled every day in dry weather. Children can readily be taught this mode of propagation, and may begin with choice tea roses, mock orange, hydrangeas or other flowering shrubs, and arbor-vitæ or junipers. The base is usually cut square off with a keen knife close below a joint. The bed is protected by a covering through winter and the rooted cuttings are set out in April.

RAPID GROWING STREET TREES.

It is a great mistake to choose the Silver Maple and different Poplars for street trees, merely because they grow fast. In a few years they are objectionable because they are so very large, and have to be removed or hacked down. Such moderate growers as Horse Chestnuts, Norway and Sycamore, or Sugar Maple are much better, even though a trifle less rapid in growth. Few people complain that they are too large for the streets.

CLEANING WALKS.

In regard to killing weeds on gravel walks, the *American Cultivator* says: "Cover the surface with salt, as if a slight shower of snow had fallen on it. If the salt lies a week before being dissolved by dew or rain, so much the better. This long contact with the salt will kill every living thing, weeds, grass, moss, snails, worms, slugs, and when the salt at last disappears all the vegetation will go down with it, and the gravel will also, as it were, be polished to a sparkling brightness by its chemical and mechanical effects upon it."

PRUNING.

Dr. Warder says it is well proven that the leader of an evergreen can be shortened with impunity.

THE BARBERRY.

In answer to your subscriber's inquiry of the 19th inst., will say: that the barberries, in variety, are very hardy in this locality, and it is said to be hardy from Canada to the Gulf of Mexico. As for an ornamental hedge, if properly trained, nothing in the line of deciduous, and very few of the evergreen hedges, to my estimation, rival the purple-leaved barberry. I have grown it here to perfection on bottom and upland, and it is thrifty either place if the ground is sufficiently pulverized. It grows from three to five feet high, with violet-purple foliage and fruit. Should be planted six to eight inches apart and one inch deeper than it stood in the nursery, and cut back almost to the ground after transplanting to induce emission of shoots. The next spring cut it back to three to four inches, and the next three or four inches more, and so on every year until your hedge is about three feet high, and by so doing you will have a very compact, beautiful and comparatively defensive hedge.

AMBROSE MARTELL.

SOME ORNAMENTS.

The Cembrian Pine is one of the most beautiful evergreens, and is of very slow growth during the first fifteen years, and is well adapted to places of moderate size. Of smaller trees, the Siberian and the Pyramidal Arbor Vitæ, as well as the Sweedish and Irish Junipers, are desirable. The Pyramidal Arbor Vitæ and the Irish Juniper should be planted as single specimens, or grouped with trees of broader form. Of very small trees, the Parson's Compacta and

Pumilla Arbor Vitæ, the *Suecia Nana*, and the *Retinospora Plumosa Aurea* are all desirable.

The American Linden is a lofty-growing tree, requiring plenty of room to develop its vigor. On this account it is not very well suited to narrow streets, but it thrives well and is a fine tree for planting on wide avenues and suburban localities. The Lindens have very sweet, odorous bloom, perfuming the air with their delicious fragrance, and furnishing excellent forage for bees. For this reason its planting should be encouraged wherever it is likely to grow successfully.

FORESTRY.

A TREELESS COUNTRY.

"I had a dream which was not all a dream!"
A great State was a desert, and the land
Lay bare and lifeless under sun and storm,
Treeless and shelterless. Spring came and went,
And came, but brought no joy; but in its stead
The desolation of the ravine floods
That leaped like wolves or wildcats from the hills
And spread destruction over fruitful farms,
Devouring as they went the works of man,
And sweeping southward nature's kindly soil
To choke the watercourses, worse than waste.

The forest trees that in the olden time—
The people's glory and the poet's pride—
Tempered the air and garded well the earth,
And under spreading boughs for ages kept
Great reservoirs to hold the snow and rain,
From which the moisture through the teeming year
Flowed equably but freely—all were gone.
Their priceless holes exchanged for petty cash.
The cash had melted, and had left no sign;
The logger and the lumberman were dead;
The axe had rusted out for lack of use;
But all the endless evil they had done
Was manifested upon the desert waste.

Dead springs no longer sparkled in the sun;
Lost and forgotten brooks no longer laughed;
Deserted mills mourned all their moveless wheels;
The snow no longer covered as with wool
Mountain and plain, but buried starving flocks
In Arctic drifts; in rivers and canals
The vessels rotted idly on the mud,
Until the spring floods buried all their bones;
Great cities that had thriven wondrously,
Before the source of thrift was swept away,
Faded and perished, as a plant will die
With water banished from its roots and leaves;
And men sat starving in the treeless waste,
Beside their fruitless farms and empty marts,
And wondered at the ways of Providence!

N. Y. Sun.

ONE WAY OF RAISING BLACK WALNUT.

Mr. W. H. Ragan, Secretary of the Indiana State Horticultural Society thinks that in raising black walnut trees the rows should be set about seven feet apart at first, and corn, or potatoes, or some similar crops cultivated between the rows for two or three years. In raising the trees, he says, it is of utmost importance to do everything in the best manner. Those who carelessly plant the nuts, especially after they have dried for a long time, will probably fail to get trees; or if any grow, and the owner expects the young trees to take care of themselves, he will be greatly disappointed. Mr. Ragan's directions are therefore to the point, when he says the ground should be prepared in the best manner in the autumn. Furrow the ground off each way as for corn, except that the rows should be seven feet apart. Take the nuts, fresh from the tree, and plant two at each crossing. They are to be covered shallow, just enough to hide them. So much for planting. Then next spring furrow the seven-foot spaces intermediate between the rows, and plant with corn or potatoes. The corn and young trees will be all cultivated alike, and the young trees must be kept clean. The second spring thin out the trees to one in a hill. The thinnings will fill any vacant spaces where needed. Corn or potatoes may be planted the second, or even the third year, and after that the trees must be cultivated and kept clean until they occupy the whole ground so fully as to keep down by their shade all weeds and grass. Standing so near as seven feet, the trees will not require trimming, but will thus trim themselves. But when they begin to suffer from crowding, take out every alternate tree in each row, and in a few years another thinning may

be made by taking out alternate trees in the rows at right angles to the first, leaving them fourteen feet each way. If the trees are to stand until they become quite large, additional thinning may be necessary. But they should always be thick enough to obviate the side trimming of branches.

THE TIMBER SUPPLY.

Commissioner of Agriculture Loring, reviewed the present condition of forests in the country, and advocated their increase and preservation by State and National aid. The great opening of forest wealth is in the south. The supply of pine and spruce at the present rate of consumption in some northern States will last a few years, while in the southern States it will last from one hundred to one hundred and fifty years. He recommended the opening of the latter and the abandonment of the former, until they have recuperated by natural and artificial growth.

As to the necessity and utility of timber on every prairie farm there can be no question, for every intelligent, observing person realizes the great need of groves and belts of trees for ornament, shade and shelter, and to furnish a ready supply of timber for the thousand and one needs of the farmer. But perhaps no phase of the forestry question will have so great an interest for the average farmer, or be more likely to arouse the general public than the promulgation of the fact that our available supply of lumber material is rapidly diminishing, and very soon the end will be reached. Michigan had left standing last fall 29,000,000,000 feet of pine lumber, which will last seven years, at the present rate of cutting, as her lumbermen are cutting over 4,000,000,000 feet annually, over forty hundred million. Wisconsin has 41,000,000,000 feet, which will last twenty years, at the present rate of cutting. Minnesota has 6,100,000,000, which will last ten years. Now, these are the main sources of supply for all of the western country, and much of the south, and at the present rate of cutting, the whole supply will be exhausted in eleven years; and yet our late Congress saw not the necessity of removing the tariff on lumber. Pennsylvania has pine enough to last five years, and hemlock to last fifteen years. Maine has spruce and pine enough to last sixteen years. New Hampshire does not return a single pine tree, but has black spruce enough to last ten years at the present rate of consumption. It is true, some of the Southern States have pine enough to last them a long time at the present rate of cutting, as they are cutting very slowly. Texas, for instance, has enough to last 300 years, but the Michigan lumber-

men, at their present rate, would clear Texas in five years. It is not only pine, but all other lumber trees are getting scarce; also, 50,000 acres, mostly hardwood, are stripped each year for railroad ties alone. When I was a boy black walnut lumber sold from \$10 to \$15 per thousand feet, now from \$75 to \$100, and other kinds of hardwood lumber are perhaps four times as high as they were forty years ago.

LEGISLATIVE FORESTRY.

The most remarkable incident of the popular excitement is that legislative bodies, moved to act under this excitement, take no counsel with those who could wisely advise them, but follow the lead of empirics or visionaries who, while they know a great deal about what was the direful result of cutting away forests in the Old World a couple of thousand years or so ago, can scarcely tell a post oak from a pitcher plant, or plant or prune a tree successfully to save their lives. It has been the constant work of the *Gardener's Monthly* to save forestry from the work of these people, because nothing so injures a good cause as egregious ignorance. Take the various timber culture acts of the United States, the looseness of which we have so often exposed. It is a well known fact now, that, though there have been a few meritorious examples of intelligent good faith, the great bulk of grants under the acts have been wasteful or fraudulent. In the language of a correspondent of the *Inter-Ocean*, "Very few, if any, entering lands under the timber culture act, ever continue the culture after securing their lands, and after completing their proofs there is very little timber on the land that amounts to anything. They simply plant a few scrub cotton wood trees, and after acquiring the title to the lands, allow the fire to run through them, and that is the end of their timber culture."

SPARE THE FORESTS.

The *Michigan Farmer* presents the following excellent bit of common sense in regard to the common newspaper cry of, "Spare the Forests:" "Of what use is a forest if you do not utilize it? It produces nothing, and prevents anything else from being produced. Cut it down and turn it into cash, and in its place grow crops that will feed the people and enrich the grower. If timber is wanted, grow it as you would any other crop, and when it is ready to cut put it in market with as little compunction as you would a crop

of wheat. Let us look at this question in a practical way, and do away with such sickly sentimentality?"

The facts show that the old belief, that slow growing trees made better timber than fast growing trees, is not the rule. It is, in fact, chiefly from a consideration of willows and poplars alone that the belief originated. Now Dr. Rothrock shows that it is not even true in the same species. He first explains why timber is good or bad." "The difference in the quality of the wood is obviously in the relative predominance of solid woody fibre in the good as compared with ducts in the bad." And he then contends: "For white oak we may contend, other things being equal, the specimen of oak timber with the larger year's growth is the better."

SUNKEN FORESTS.

In Neltner's *Grower*, Mr. M. S. Hubbell states that Professor Teas of Missouri, gives us an account of his visit to the sunken lands in eastern Missouri. Hundreds of thousands of acres of dense forest was sunken there by the convulsions of 1812. This sunken tract has since been covered with water from one to ten feet deep, and all timber, including most of our native durable varieties, has long since perished, except the Catalpa, which though dead and in the water for seventy years, still stands erect. This of course means that the dead trees have all rotted away, except the Catalpas. We refer to the paragraph for the sake of the sunken forest question,— a matter that has had but little scientific research.

THE TULIP.

The tulip tree, commonly but erroneously called yellow poplar, is one of our most strikingly beautiful deciduous trees. For beauty of foliage and flowers, for massiveness, elegance, symmetry of form, it has but few equals among our native forest-trees. As a rapid grower it is surpassed by none. It is, however, quite difficult to transplant. This may be overcome by frequent transplanting in the nursery; but if this has not been done, they should be severely cut back at time of transplanting; even if cut back to near the ground it will the more certainly insure a good growth and a fine tree. It grows readily from seed.

CHESTNUTS.

I know of two attempts at cultivation of the chestnut on limestone land. One made about twelve years ago, when a number of trees were set out, but at this time only two are three are alive, and

they but three or four inches in diameter, if my memory serves me right, and very much smaller than other kinds of trees set out at the same time. In the spring of 1879 we set out forty one-year old chestnuts in a nursery row at the college. To-day only three are left, and they are but little larger than when they were set out, although catalpas, ash, and other trees in adjoining rows have grown well

[This is a question of very great interest in American forestry, and it is very desirable to have it settled in accordance with a wide basis of facts before it is finally dropped. For our part we are very much mistaken if we have not seen superb chestnut forests on limestone land in Chester and Montgomery counties, Pennsylvania; but should be glad to know positively from those living in such sections. —*Ed. G. M.*]

At our place in Jackson county, Mo., on the strongest of lime-soil, the chestnut does admirably. I have one hundred trees planted seven years and they have borne three times; last year about one-half bushel of the finest nuts I ever saw.

They will succeed on any high dry land, where they have the very best of cultivation. As good cultivation as you would give your berries or nursery stock. Buy one year plants and plant in nursery row for two years or three; then transplant.

L. A. GOODMAN.

INSECTS.

REMEDIES FOR INSECT DEPREDACTIONS.

Dr. Sturtevant, in the 63d bulletin of the N. Y. Agricultural Experiment Station, says:

One of the greatest boons of gardening would be the discovery of efficient methods for the destruction of insects, as well as remedies which are easily to be procured and of easy application. This, however, is a difficult matter to accomplish, and upon a view of the season's work they recognize but little absolute success.

The cabbage worms have been abundant and destructive. We have warred against them with tobacco-water, saltpeter, alcohol, boracic acid, bisulphide of carbon, etc., in various combinations, but we finally settled upon an emulsion of kerosene oil and soapsuds as

the remedy that, all things considered, was the most satisfactory. It appears that one ounce of common yellow, hard soap, one pint of kerosene oil, and one and one-half gallons of water, well mixed and stirred, and applied by means of a rose from a watering-pot, destroys all worms that become thoroughly wet with the mixture and does not injure the plant. Care must, however, be taken to keep the ingredients thoroughly mixed in the pot, for if the oil is permitted to rise to the surface, so that it will pass out upon a few plants, it will prove fatal to the few, while the remainder will not receive enough of the oil to destroy the worms. In this case the oil is the insecticide, the object of the soap being but to thicken the liquid so as to retard, in a measure, the separation of the oil from the water. A larger proportion of soap makes the water so thick that it will not flow readily through the fine openings of the rose. A larger proportion of the oil endangers the plant, while a smaller proportion is insufficient against the worms. There is one caution, however, to be given: If repeated applications of the mixture are made upon the same plants, the more tender varieties will be destroyed or will be injured.

FIGHTING THE CANKER WORM.

There is not an orchard in Massachusetts that can not be protected from the canker worm if "eternal vigilance" is practiced. One June I found that the ends of limbs of the trees in my orchard had turned red. I discovered the worm, but it was not numerous enough to destroy the foliage. In November following I put around each tree strips of paper eight inches wide and nailed them with carpet nails. I put a strip of cheap printers' ink, to commence with, about four inches wide in the center. I caught nothing in the fall but millers. Early in the spring, I commenced the work. One has to be governed by the weather. The bugs never come out of the ground till the frost is out two or three inches. If the weather is warm, once in four days will be often enough to ink, unless they are likely to bridge it over. You must watch both the slugs and the weather. The last of April, one year, there lay around some of my trees a ridge of slugs two inches deep, which had fallen from the paper. I saw no effect of the canker worm on my trees that year. I had thought of leaving the papers on the trees for next year, but on examining one of the trees in September, I found a number of borers busily at work under the paper. I took the papers from all the trees and found the borers very numerous. The next spring I put the printers' ink on the trees without the paper, and scraped it off in the month of June, and didn't catch as many slugs as I had

trees, and I have had no trouble with them since. Not one-half of the fruit trees that have been set out in Massachusetts for the past five years have amounted to anything for the want of care. Do not divide this by two, for it is true.

PETER FAY.

TRAPS FOR CODLING MOTHS.

The most effectual way to trap the codling moth, says the *Mirror and Farmer*, is to catch them in wide-mouthed bottles hanging in the trees. About three years ago we had hung in our orchard about ninety bottles and in one night caught 1,250 of these moth millers, by actual count. Previous to that season our fruit was wormy and very unsatisfactory, but since then we have had as fine apples as one could wish. Last Saturday two bottles were hung in a couple of trees in our yard and eight moth millers were taken; and on Monday morning fourteen more of these pests were secured. On Tuesday, June 13th, seventy bottles were hung in the orchard, and 365 moth millers and ten apple curculios were taken from those seventy bottles on Wednesday morning. There are about 600 trees in the orchard. We give for the benefit of our readers the receipt for making bait for these traps, which is two parts of cider vinegar, one part molasses and four parts water. Fill each bottle about half full and hang one or more in each tree. Old fruit cans are equally as good, and can be set in the crotches or limbs of the trees.

ORCHARD PESTS.

Mr. Charles Julyan, of Presque Isle, Canada, in a late letter to the Canadian Horticulturist, St. Catherines, says: "We sustained very little injury last year from the ravages of the codling moth, but in the course of the summer I noticed in an agricultural paper a receipt for capturing the moths by hanging wide-mouthed glass jars under the branches of the trees, containing a mixture of water and molasses (or sugar) and vinegar, so I resolved to try it. I hung up in the different parts of my orchard, about one acre in extent, three glass preserve jars with the above mentioned mixture in them, and a few days afterwards I found some of the moths caught. I let them remain another week or so; the water was full of moths and some beetles of a black color with wide ivory bands around them. I sent a specimen to the agricultural editor of the *Toronto Globe*, and found it was one of the burying beetles. I had to empty the jars and replace the mixture more than once during the fall, and destroyed

some hundreds of moths. Whether they were all codling moths I can not say."

DESTROYING INSECTS.

In my first experience with mealy bug, I tried to wash him off with soap suds and clear water too; but it seemed as if he enjoyed the bath, and only laughed in his sleeves. But he does not laugh now when I touch him with a camel's hair dipped in alcohol, to which has been added an equal part or a little more of water.

On soft wooded plants, like Begonias, etc., I destroy the scale by the same process. But on large, woody plants, I use kerosene or coal oil, about a tablespoonful or two to a pail of water, keep well stirred, and wash thoroughly, then rinse with clear water. A florist told me he used crude carbolic acid, one teaspoonful to five gallons of water, and one pint of soft soap. Wash well, and rinse in clear water. I believe there are very few things they will not attack if they get a chance. A dry close atmosphere or anything that checks the growth of the plant is favorable to their propagation.

A friend told me to-day that she checked the ravages of red spider, after she had plunged her plant repeatedly with no effect, by scattering powdered sulphur over it, or rather, on the under side of the leaves.

INSECTS ON HOUSE PLANTS.

At this season of the year it is necessary for the careful housewife to watch her plants closely, so as to keep away all intruders. The old saying that "an ounce of prevention is worth a pound of cure," is very true in this case.

I find that one or two good smokings with tobacco previous to placing them in their winter quarters, and a frequent washing and sprinkling afterward, will usually keep them clean, healthy and free from insects. To the inexperienced plant grower, the aphid, a plant louse, and the red spider, will be likely to give the most trouble. The aphid generally makes its appearance on such plants as have no thorough drainage, and whose roots are in an unhealthy, sodden condition. After giving them a good smoking in a close closet (or large dry goods box), they should be washed clean, repotted, and the old decayed roots cut away. Be sure to give good drainage, and if the pot was a hard-baked and unhealthy one, throw it away, and supply with a new one, with a handful of broken charcoal at the bottom. In a day or two place it in a sunny window, and I do not think the insects will annoy you again.

The red spider loves a dry, hot atmosphere, such as is found in most parlors and sitting rooms. Plants kept in kitchens are less liable to these pests, as the steam or moisture from the kettles upon the stove or range obviates this difficulty in a measure. These insects are so small that sometimes a plant is ruined before the housewife detects the danger. Where they are badly infested it is best to throw them away at once, but if only a few are found, they may be eradicated by constant washing. This is the only way, for they dislike water. Those plants which are especially liable to the attacks from the spider, I immerse once or twice a week, which is better than a mere sprinkling. Always keep a basin of water on your sitting-room stove.

Scale insects are often seen on ivies, oleanders and other hard-wooded plants, but frequent washing with carbolic soapsuds will eradicate them. To get rid of the mealy bug, it is necessary to pick them off by hand, or with a pin, and it is said that whale oil soap suds will force it to disappear, but I have never had much trouble from these insects. I had but one plant ever troubled with them, and by hand-picking and frequent washing I soon discharged them entirely. It was a plant procured from a florist and was infested when I bought it, though I did not observe it until I reached home.

The above are insects most common to house plants, but if the plants grow vigorously, are healthy and are well cared for, the ravages of insects are not much to be dreaded, and if they do appear, they can easily be routed. Fresh water well applied, fresh air on pleasant days, (though it should never come directly upon the plants) and cleanliness at all times are the best preservatives against insects.

SLAKED LIME FOR THE CURCULIO.

Among all the remedies for this pest, I cannot conceive of one that is more likely to be effective or that is cheaper or more easy of application than slaked lime sifted on the trees during the period when the insects are at work. The great trouble with fruit-growers as a class, is, that we are all the time seeking for new remedies, and never thoroughly applying them. One or two applications are not sufficient in a majority of cases to determine an experiment. And often after trial and their value proven, we neglect or desert them for something new. The jarring of trees, and the picking of the animals from under shelter at the roots of the trees in early morning, and destroying them, are certainly effective methods as far as they go; but all cannot be destroyed in this way. The lime drives away

all, be the number great or small, if properly and dilligently applied. Numerous instances of its effectiveness might be mentioned, but I know of one remarkable instance which will bear repeating: A friend of mine had a cluster of six or eight nice plum trees in his garden growing in an irregular group, one or two at several feet distance from the rest. One year they set full of fruit, and he resolved to give the lime remedy a thorough experiment. He fastened a convenient sieve at the end of a pole, with which to apply the lime. He then selected certain of the trees upon which to operate—upon one portion of these he began early before the curculio made its appearance, and sifted them at intervals when the dew was on or after a rain; upon the other portion he began later, after the insects had been at work, and had perforated numbers of the fruit. The third portion he left untouched. The result was that upon those trees on which he began early, to save all the fruit unhurt; on those which had not been limed at all, he lost all; while on those which had been limed later he saved the portion that had been unstung when he began. This experiment, faithfully begun and continued, I regard as conclusive of the value of slaked lime as a preventative of the ravages of the curculio. Yet I would not discourage the application of the jarring process. This remedy often fails, or is productive of but partial results, because the grass or weeds are permitted to encumber the ground beneath the trees, rendering it difficult; and often for want of thorough and frequent jarring. I have no doubt but the lime remedy would also be effective in the case of the codling moth; and strongly recommend its trial.

But—and here is the great and important fact—if all our fruit-growers would, with one accord, regularly, actively, faithfully, persistently, determinedly, apply each of these remedies, these troublesome insects could be brought under subjection, if not entirely eradicated. But, Oh! here's the rub! we woefully lack these requisites to success. We go on from year to year, in our old plodding way, not doing half as well as we know how; the insects yearly increasing, and we talk of giving up fruit-growing because it is unproductive.

“It is a common remark that the expert horticulturist will make the most in those seasons when there are most obstacles to be overcome, for then, while the ordinary cultivator will succumb to the obstacles, making the horticultural products scarce and high, the expert will overcome the obstacles and command high prices for his products. He will watch the weather in winter, and if the winter proves unusually severe, he will increase the protection. He will be on the watch at all times for destructive insects, and employ means

to limit or diminish their effects. If severe drouth ensues, he will do all it is possible to do to counteract its effect, either by stirring the soil frequently, or by mulching. If his trees, plants, vines or fruits are suffering from disease, he will study its nature, learn and apply the remedies. There is a wide field for employment of first-rate talent in growing fruits and vegetables for market."

STRAWBERRIES DESTROYED.

Parker Earle of Illinois, who has been known as one of the most extensive and successful cultivators of fruit at the West, informs us that the new sorts of the strawberry under trial were so nearly ruined by the attacks of the "tarnished plant bug" as to leave him no chance to judge of their quality and appearance. He adds: "The one variety which escaped destruction by this insect in our own fields, and which really gave us a profitable yield, was the Crescent. From no other variety did we get even a quarter of a crop. We had Bidwell, Comberland, Sharpless, Miner's Prolific, Capt. Jack, Charles Downing, Mount Vernon and Longfellow, in quite large amount, and none of them gave but the merest fraction of a crop—the last two sorts not one perfect berry from six acres."

A NEW INSECT DISEASE.

The European cabbage worm (*Pieris rapæ*) is affected, about Normal, by a deadly and destructive disease, extremely similar to that known among silk-worm breeders as "Schlauffsucht" or "la placherie." Worms attacked by it are at first decidedly paler in color than healthy individuals, and soon become somewhat sluggish. They die in a few hours, and decay with extraordinary rapidity, being soon reduced to an almost fluid condition, and dissolving at a touch. These blackened, dead worms may be found by hundreds in any cabbagefield in this vicinity.

I have now carefully studied this disease, both in the cabbage-worm and in two species of the genus *Datena* (the yellow-necked apple caterpillar and the walnut *Datena*), and find it to be due to the occurrences of immense numbers of excessively minute bacteria, at first in the alimentary canal, and afterward in the blood. I have also proven that the disease is contagious, that the bacteria causing it can be artificially cultivated in beef broth, and that it can be introduced and propagated among healthy insects by means of such artificial culture.

My object in penning the present note is earnestly to request the readers of the *Prairie Farmer* to examine their cabbage fields, and

to inform me whether they find these dead and rotten worms in any number upon the plants. It is important, to an understanding of this important matter, that we should know how deadly and widespread the disease may be; and I also wish to obtain, if possible, some thoroughly healthy caterpillars upon which to experiment. All hereabouts are so seriously infected that we find it difficult to keep them alive and free from disease long enough to reach satisfactory results.

S. A. FORBES,
State Entomologist.

NORMAL, ILL., Sept. 18.

INSECT ENEMIES.

These papers with the above caption cannot be considered complete unless we refer to a few of the insect foes with which the orchardist in central Kansas has to contend during the first six years after planting the trees. During this period he must remember that unceasing vigilance is the price of handsome trees and beautiful fruit.

Undoubtedly the most destructive insect to young apple trees is the flat headed borer. As a preventative to its attack on newly planted trees, we always mulch the ground for the space of three feet around the trees and wrap the stems with building paper or long grass. This care after planting with constant cultivation will procure a strong healthy growth. This of itself will procure a complete safeguard against the attack of this borer. A good washing of the trunk with soft soap about the end of May and again in July is an excellent preventative. Wounded portions of the stem caused by whiffletrees or sun-scald, always invite the deposit of eggs. This insect is easily overcome if the orchardist is wide awake.

Another pernicious insect which demands close attention is the peach borer. Their presence in a tree may be known by the copious mass of thick gum around the collar of the tree. Draw away the soil and follow the borer with a sharp knife. It always bores its way downwards. Throwing a bank of soil a foot deep around the foot of the tree is an excellent preventative. A copious application of hot water will destroy the borer and will not injure the trees.

The tent caterpillar will defoliate young trees in early summer, unless destroyed. Each worm begins spinning the moment it is hatched, and by the united efforts of the whole progeny they soon cover themselves with a tent or web. As they increase in size they

extend their web and feed under it. They are easily destroyed by pulling off the web, and crushing the larvæ under foot.

The rascal leaf crumpler sometimes become so numerous in young orchards as to seriously effect the health and vigor of the trees. The bunches of withered leaves anchored to the twigs of the tree by strong silken cables are sure indications of its presence, unerring tokens of past injury to the trees, and symbols of increased injury in the future unless removed and thrown into the stove and consumed.

These insects, especially the first named, have destroyed thousands of fruit trees, and yet there are three animals belonging to the natural order Rodantia which have destroyed their tens of thousands. These are the jack rabbit, the cotton tail rabbit and the common meadow mouse. Their destructive habits are so notorious that nothing short of encasing the stems in some strong material will protect young trees during winter from their attacks. Begin now and protect your trees and you will never regret the advice given.

BATTLING WITH BUGS.

"Eternal vigilance is the price of"—a crop of fruits and vegetables. With the advent of warm spring weather the contest must begin, to be waged all through the season, first in one direction and then in another, and another, until the year's crops are secured. At a late meeting of the Massachusetts Horticultural Society, J. W. Manning, the secretary, read a paper on the subject: "What is the best method of repelling or destroying the insect enemies of fruit and fruit trees, especially the codling moth? Is trapping a proved success? What are the results of experiments with Paris green or other poisonous applications?"

After speaking of the universal prevalence of destructive insects, one following another through the season, he said that the most effectual remedy for the canker worm is London purple or Paris green, the first being preferable. Being lighter it will remain suspended in the water better, and its color is such that it can be seen better. A slightly heaping teaspoonful to three gallons of water, or a pound to two hundred gallons, is about the right proportion, but the strength varies, and the exact quantity must be found by experiment. If too strong it will kill the leaves, and if not strong enough it will not kill the worms. It should be applied in a fine spray, either with a common garden syringe or by a portable pump with hose attachment. The latter may be placed in a wagon, with the poisoned water, for convenience in moving. All the foliage

should be sprinkled. Sometimes it is necessary to make two applications, but frequently a single application will clear the trees for years. In the grounds of Amos Hill, of Belmont, where it was used in 1878, and those of the essayist, who in 1880 applied it to thousands of apple and elm trees in his nursery, few insects have been seen since, and a second application destroyed these. The best time is as soon as a perforation of the leaf can be seen, but it has proved effectual when the worms were nearly grown. For tall elm trees, which cannot be reached with a syringe, printer's ink on a band of paper round the trees, or a metallic collar filled with oil, may be used. A box set round the base of the tree, with a trough for oil, was used in Mr. Clapp's orchard, in Dorchester, nearly forty-five years ago. The first set of boxes lasted twenty years the second set still remain. They cost about two shillings each. The use of these methods would be of more benefit if a general application should be made to all the trees infested. It is a singular fact that the canker worm will eat anything up to a certain division wall, while beyond the wall not one will be seen. The orchard of T. C. Thurlow, West Newbury, was devastated for years by the canker worm, but the use of printers' ink, at the expense of four and a half cents per tree, was followed by a crop of nine hundred barrels of No. 1 Baldwins, seven hundred the next year, and fourteen hundred barrels the third year.

The codling moth is one of the worst enemies of the orchardist. The warmth that brings out the fruit blossoms in spring also brings these moths from their cocoons. These moths lay their eggs in the blossoms or calyx of the apple, and the worm when hatched bores its way into the apple, causing it to drop prematurely. The worm then crawls into crevices, where it spins for itself a cocoon. To destroy this insect we must rely on the old measures, which would be much more effective if a combined effort were made, so that one man who is trying to rid his own grounds of these pests should not be beset on all sides by the unchecked insect enemies of his neighbor, obliging him to keep up his efforts year after year. Gathering and destroying all fallen and wormy apples is one of the first requirements. Swine or sheep running at large in an orchard will do this effectually, and also fertilize and work the soil. This plan has been tried with the best success by Colonel E. C. Shirley, of Goffstown, N. H. Trapping is undoubtedly a help, either by straw bands around the trees, or wollen rags, or any other substance which affords the worms a place to transform. The essayist thought that a supply of hot water, made transportable, to immerse the traps in, would be

better than the pounding or hand-picking usually adopted. All dead bark should be scraped off the trees, to reduce the number of places where the worms can find shelter.

Open fires at night in the garden and orchard destroy a large number of winged insects, including codling moths, and it would be well to have them in the adjoining fields, and especially near woods. A lantern over a tub of water is one of the most useful traps for insects, especially with a coating of oil on the water. It would undoubtedly pay to hire a man to attend to this work, as the farmer or gardener and his assistants are too tired when night comes on. Charles Downing recommends wide-mouthed bottles, half filled with a mixture of water, vinegar, and molasses, to be suspended among trees. In a fortnight they will be full of insects of all kinds, and must be emptied and the liquid renewed. In this way one man captured more than three bushels of insects in his garden in a single season, and preserved it almost entirely from their ravages.

The apple borer can be destroyed by cutting out where the castings show, if taken early; later, when they are deeper in the wood, a flexible wire pushed into the hole will kill them. But it is better to prevent them from getting into the tree by a strip of tarred paper around the base, the bottom covered with oil and the top tied close around the trunk six inches up. A strong solution of soap is also useful to wash the base of the tree to destroy the eggs laid there. The scale louse can be destroyed by raw linseed oil; crude petroleum is also effectual; it must be diluted with water, which can be done by first mixing with milk. The slug which infests pear and cherry trees can be destroyed by sprinkling with air-slacked lime, plaster of Paris, or any dry dust. A spray of London purple is also effectual. There is no better remedy for plant lice than tobacco water.

Tent caterpillars can easily be destroyed by hand picking or the spiral brush when they are in their nests on a cool day or early in the morning. They can also be prevented by picking off and destroying their eggs, which are found in glazed masses surrounding the twigs. For the last six or more years this vicinity has been almost entirely free from the tent caterpillar, and the essayist felt confident that they were destroyed by a misty rain that covered every part of the trees with a coating of ice at about the hatching season. Farther inland, where the storm was snow instead of rain, they were never more destructive.

The system of destroying the plum curculio most used is to jar the insects off by a sharp blow of a mallet on a limb sawed off for that purpose on to sheets arranged around the trees, when they are

caught and destroyed. It is quite important to jar all the trees in the vicinity where the insects might lodge. Many have lately planted their trees in hen-yards, where the hens destroy the insects and fertilize the land. Fumes of burnt leather are useful in driving off insects during the time they damage fruits, but this method does not destroy the insects.

In closing, the essayist expressed the hope that any new method of destroying insects observed from time to time might be reported at the meetings of the society.

A NEW STRAWBERRY INSECT.

Mr. C. H. Allen asked me to-day (May 24) what it was that was eating his strawberries, and what he should do for it. Upon inquiry I found that the insect was a Myriapod, a species of Chilopoda, related to the centipede of the Southern States. They did not eat the vines nor the green berries to any appreciable extent at least, but were to be found in the ripest, softest fruit, sometimes the whole interior being eaten out. I found, further, that they were in a patch that had been set several years, and in that only. I think I have seen the same insect in my celery every winter, where it is banked up for bleaching and to be kept through the winter. It is a slender, brown worm, many jointed, a single pair of feet to each joint, and two or three inches long. My impression is that this species usually feeds on soft or partially decayed vegetable tissues, and is attracted to the strawberry because of its soft condition. The mulching of strawberries for the winter, or even the leaves and weeds in the same place for several winters, would be conducive to their development. It seems to me the only remedies necessary are more frequent or closer picking, so that the fruit does not get over-ripe, and not planting strawberries on the same ground again till some other crop had been raised that would leave the ground bare during the winter.

C. H. FRENCH.

CONQUERING INSECTS.

Among the more formidable and destructive insects to fruit, widely known to fruit raisers throughout the country, and to which we have often alluded, are the plum curculio and the codling moth. Partial remedies have been more or less used for destroying them. The codling moth is commonly regarded as the most formidable and most difficult to conquer of the two, and is the worst of all enemies to the apple crop. Among the remedies employed in past years is turning a flock of sheep into the orchard as soon as the fruit is set,

and keeping them there till near the time for the maturity of the crop. They pick up and devour the infested fruit as soon as it falls, and thus destroy the insects within it. Four or five sheep to a tree are plenty, and they require a daily feeding of grain. We have known orchards thus treated to be nearly free from the codling worm, while other neglected orchards in the neighborhood were thronged with the insect. The sheep are kept from eating the bark by a wash of whale oil soap, lime wash and sheep manure. Another remedy, partly effectual, is the use of paper bands around the trunk for trapping the insects. We refer to the subject at the present time from the fact that Wm. Saunders, in his admirable work on "Insects Injurious to Fruits," appears to attach comparatively little importance to a third, and which we have found by far the easiest and most efficient remedy—the spraying with Paris green. The quantity received by each specimen when no larger than a cherry, with a mixture of the poison with 700 times its bulk of water, is enough to kill the larvæ when just hatched, but it is too small ever to cause the least danger in eating the apples, as we have shown on former occasions—especially as all is washed off by rains long before the apples are ripe. We picked a fair crop of apples from a small orchard this year thus treated, while no other orchard in the neighborhood had scarcely a bushel, the scant crops being destroyed and dropping before maturity, while the Paris green, by killing the young larvæ, prevented the fruit from falling. Mr. Saunders does not even allude to the use of sheep as above mentioned, but states that hogs have been recommended, although where the two animals have been tried, sheep have been found much superior in the promptness of the work they perform, besides which hogs are not often numerous enough for extensive orchards.

In the same work a broad-headed iron spike is recommended to be inserted in plum trees to receive a blow of a hammer for jarring down the curculio; but its superiority to the bare hand for small trees, and to the padded bumper for large ones, is not mentioned. The objection to the iron spike is that the inserted end being pointed or wedge-like, it is soon driven its full length into the tree, and for this reason a blunt iron plug is better, made by cutting into short pieces an iron rod, and inserting them into holes bored for the purpose. A single brisk blow with a large hammer on one of these plugs will bring down every curculio, with much less labor and more effectually than tapping with a padded mallet, or even pounded on a sawed stump. A principal reason why the jarring process so often fails

with those who try it, is the feeble and softened jarring which is given to the trees.

We should hardly think of referring to these defects in this valuable work if it had not been so perfect in nearly all other particulars. A poor work is not worth criticising; in an excellent one we more readily observe any defect by contrast.

THE CODLING MOTH.

Of this pest a Massachusetts farmer writes: "The codling moth is the true enemy of the apple. How are we to get rid of him? If we can exterminate him from our own orchard, we may have little fear, as the insect does not migrate; his habits are purely local. I scrape all the rough bark off in winter, and the pest perishes, as it is under the rough bark that it lives, snugly housed. I find the best thing to remove the bark is a trowel, and damp weather the best time for the work. After scraping give clean cultivation, and in the spring at blooming time give the trees a good wash of soap, sulphur, coal oil and water added sufficiently to make a paste, to be applied with a brush. When the young fruit begins to fall, turn in the hogs. You have done all that man can do."

A novel method of dealing with the codling moth, the parent of the apple worm, has very recently been practiced to good advantage. There are two broods of worms in one season, often three. The first brood is hatched from eggs which are laid in the "blow end" of the apple soon after the flower drops. The young apples at this time stand erect on their stems and if Paris green and water be syringed on to them it will fill up the "blow end" and kill off the whole of the first brood of worms as soon as they hatch and begin to eat. Later the apple turns down, and all the poisonous matter is washed away before it ripens. The second brood cannot, of course, be treated in this way.

ENTOMOLOGY.

Report of Committee on Entomology made before the Missouri Valley Horticultural Society.

Your committee would respectfully report that the insects during the past year have been universally abundant. The *Soperata Bevitoto* or root borer has done great and irrepairable injury to many orchards. Wherever a want of vigilance was manifested, many trees are destroyed. Many trees have carried through that have been badly damaged. The splendid growing season has kept the trees

growing, but I predict that another year will show many trees lost that apparently are in tolerable good condition. The codling moth too, was very destructive to the crop of apples, so much so that good specimens of perfect fruit were hardly obtainable. In some localities the tree cricket did considerable damage, as did also the canker worm. The latter has not been on the increase with us and we hope for its ultimate disappearance.

The hand maid moth, on some young trees, did some, considerable damage.

The flat-headed borer can do little damage. They like a dry, hot season—sun scald being essential to their propagation and development.

The cruse borer has been quite active in some plantations and is on the increase largely.

The thrip did much damage to the grapes, and for some time, promised to destroy some entire crops.

Of all the insect enemies, there were none more destructive than the curculio and gurger. Their increase was truly alarming. The plum fared badly, also the cherry. When the stone fruit was gone they appeared largely upon the apples. In localities where peaches had been grown contiguous to apples they were particularly annoying. The apples were of little value. On the whole, I think the year, by no means, satisfactory. We have made some steps however in eradicating our enemies. Pyrethrum has been entirely satisfactory on edible plants, destroying the larvæ and insects yet by no means dangerous to man. Paris green can be used to advantage on some insects, yet the experiment is fraught with danger to man and beast.

A harmonious action is necessary on the part of all horticulturists to eradicate and render nugatory the depredations of our insect enemies. To this end let us all work.

F. HOLSINGER.

BIRDS.

Regarding the value of birds to the farmer, Prof. Stearns, in a paper read before the Connecticut State Board of Agriculture, states that a young robbin in the nest requires a daily supply of food more than equivalent to its own weight.

BIRDS AS FRIENDS AND ENEMIES.

Nearly every assembly of horticulturists discusses the bird question, and the Legislatures of the different States, when a bill for the protection of game is considered, show that there is a wide difference of opinion upon birds. Evidence as to particular species of birds is often of the most opposite and contradictory character. One speaker declares that he has watched certain birds, and is sure that a pair of them will catch a given number of caterpillars in an hour; another states that he has shot the same bird by dozens, and on examining the crops and gizzards, he found only the remains of fruits and grains and not a vestige of an insect. The discussions about birds by different gatherings of fruit-growers and farmers, seem to result in little besides the presentation of evidence which bears equally in favor of and against different birds. One important point seems to be left out of these discussions. Whatever may be the food of the adult birds themselves, they almost invariably feed their young upon insects, especially soft-bodied ones, such as caterpillars. The derful. Instead of discussing the question whether this or that bird is useful or injurious to the farmer or fruit-grower, the question should be, "Is it on the whole more useful than injurious?" In other words, can we afford to pay the birds, when mature, in fruit and grain, for the service they have rendered in devouring insects while young? It will be seen that the character of a bird, no more than that of a man, can be properly judged from a brief acquaintance. We must know it "by and large," before we can come to a proper decision. That such an investigation is attended with many difficulties, is shown by the report of Prof. Forbes, of Illinois, on the blue bird. He found on examining the stomachs of many birds, that they contained little else than the remains of insects. A superficial observer would at once assert that the blue bird was among the most useful of birds, as it feeds almost entirely on insects. Prof.

Forbes shows that the question is far from being a simple one. When he ascertained what kinds of insects were eaten by the blue bird, it was found that a large, but varying proportion of these were useful insects, that is insects which feed on other and injurious insects. It will be seen from this that the beneficial character of this bird becomes a complex problem. In one month it destroyed more useful than injurious insects. And had these useful insects been allowed to live, it is claimed that they would have destroyed many more injurious species than the blue bird did. We may state that observations in other months are more in favor of the bird, but cite this case to show the difficulties that surround the question. All will agree, however, that a very bad case must be made against the blue bird before we can be willing to dispense with its cheery spring notes.

This æsthetic side of the question will be considered by some, while others may look upon birds as robbers of grapes and other fruit, and to be shot on sight. A lover of nature, like George Husmann, writes: "The red bird or cardinal, the thrush and cat bird, also are very destructive, and it is still an open question with me, whether to feed them with sweet grapes, or kill them and go without their sweet songs in the future."

Many of the birds most useful to the farmer and horticulturist, as wrens, woodpeckers, nut-hatches, titmouse, etc., are species nesting in holes of decayed trees or stumps, and only found where such places of abode exist, disappearing to a greater or less degree with them. Of late years various contrivances have been devised, especially in Germany, to supply suitable breeding places to the birds mentioned, the most available and satisfactory being made of patterns of different shapes, either partially globular, cylindrical or conical, and suspended to the trees. These, when smeared with moss and lichens, are almost as acceptable to the birds as hollow trees would be, and attract large numbers of them.

BIRDS AS FRIENDS.

That the birds are the best friends of the husbandman and horticulturists cannot be doubted. In fact from past observations they are deemed to be essentials. During the early settlements or before the march of civilization, *i. e.*, the gentleman of leisure who with dog and gun spend their time in sporting and massacring the birds, when every person had some healthful employment, there was no trouble to raise fruit—now under our present state of society it is a matter of exceeding hardship and difficulty to raise an orchard by reason of an increased amount of insect life, doubtless the result

of the destruction and decimation of the birds. We all know that when our woods were a wilderness, they were filled with not only wild fruits, but with wild birds, both of which are now unknown to us. During the year 1857, when Kansas was new and the ravages of double shot guns were unknown, the paraket and robin abounded, with perhaps many other varieties. But the bright plumage of the paraket was a temptation to the hunter, and it has either been annihilated or has been unable to withstand the march of civilization. This we do know, that in '57 the woods of Kansas were filled by thousands of these most beautiful and useful birds, while a residence of the past seven years has failed to bring to view a single bird of this species. Other birds have doubtless become decimated during the same period. We also know that in the early settlement of the country, and especially of Kansas, the only trouble we experienced was with the rabbit. The flat head borer, curculio, codling moth, etc., were unknown. Now they abound and tree planting has become exceedingly hazardous. That in a great measure the result of increased insect life is the result of the absence of the birds, there can be no doubt. That all birds live upon insect life I do not doubt. That some are more active and vigilant I admit. But I think the organism of the birds is such that they require food of this kind, at least while they are fledglings. That some birds live upon fruits when matured and become a nuisance, is also true. Yet we should remember that without their assistance we could have no fruit, and therefore we will not begrudge them a moiety from our abundance. But say some, they choose the very best and finest fruit. True they may, and welcome. So long as I know they are working so busily to save to maturity the crop, I for one shall not be so niggardly as to begrudge them a moiety. Again those birds, *i. e.*, the sapsucker, Baltimore oriole and blue jay, which are so busy, and whose habits seem to verge on vandalism by their activity in pecking and thrusting their bills into the finest of fruit, require special attention. The sapsuckers are most active and useful friends, and under all circumstances ought to be protected. As to the orioles, they do not hatch among us, and are migratory in their tendencies, stopping only where there is fruit, and while that remains. As they are a timid bird, I think some method may be adopted to keep them out of our vineyards less obnoxious than in a wholesale massacre with guns—for when you once commence a war upon a species, or after a few discharges, every boy and person having a gun imagines it their duty to come to the rescue, when a massacre of the innocents is the result. Give a boy a gun and he will shoot—orioles when plenty.

when they are not, he must have something to practice upon, consequently the chances are that he will shoot at anything that comes in his way—until the birds are seldom met with in his locality. Laws to prevent the destruction of the birds should be enforced, and when not sufficiently stringent—others should be passed. However, all laws upon this subject seem to be dead letters.

It requires a considerable nerve to inform upon a neighbor for trespassing or killing birds. One of my neighbors come to me one day having ten quail which he killed at a single shot. When I told him the penalty for each bird at that time, was five dollars, and that while I believed it my duty to inform upon any neighbor who could thus wantonly defy law by killing such valuable birds after having passed through so severe a winter, yet personal considerations would prevent me from making the information. While it is exceedingly unpleasant to bring before a magistrate those who defy the laws, yet, as every man's house is his castle, he may protect the birds by the inalienable right of defense of his most sacred rights, by preventing trespassers from intruding upon his grounds. And should a community covenant and agree mutually to enforce and protect each other in the obedience of law against hunting upon their properties, this species of vandalism would be a thing of the past; and not only the birds but the stock, and perhaps our own persons might be saved by such a course. That much stock has been destroyed in this way, I know. And that accidents from the too careless use of fire-arms in the hands of too careless boys is a fact so notorious as to require no affirmation. On the occasion of our last meeting while going home, I met three boys, one with a gun, and when only twenty yards distant, his gun was discharged almost in a line with one of their number, and at such close range that the lad felt the force of the discharge upon his thigh, and for a time seemed to think he was injured. So close was he that had he been struck, his death certainly would have been the result.

What can be done to encourage the birds. First, abolish the hunters; then protect them in every way, making them habitations for their development. What is nicer than a nest of blue birds or dozens of martins and wrens near the building to encourage us with their notes of praise and industry. Any rude box or a suspended gourd is sufficient encouragement to insure their presence. Other birds may be provided for similarly.

FRANK HOLSINGER.

SCIENTIFIC.

ON THE RELATION OF HEAT TO THE SEXES OF FLOWERS—BY PROF.
THOMAS MEEHAN.

At the meeting of the Botanical Section of the Academy of Natural Sciences, of Philadelphia, on April 9th, Mr. Thomas Meehan referred to his past communications to the Academy showing that in monœcious plants female flowers would remain at rest under a temperature which was sufficient to excite the male flowers to active development. Hence, a few comparatively warm days in winter or early spring would bring the male flowers to maturity, while the female flowers remained to advance only under a higher and more constant temperature. In this manner the explanation was offered why such trees were often barren. The male flowers disappeared before the females opened, and hence the latter were unfertilized. He referred especially to some branches of *Corylus Avellana*, the English Hazel nut, which he exhibited before the Section last spring, in which the male flowers (catkins) were past maturity, the anthers having opened and discharged their pollen, and the catkins crumbling under a light touch; but there were no appearances of action in the female flower buds. There were no nuts on this tree last season. The present season was one of unusually low temperature. There had not been spasmodic warmth enough to bring forward the particularly excitable maple tree blossoms. The hazel nut had not therefore had its male blossoms brought prematurely forward. He exhibited specimens from the same tree as last season, showing the catkins in a young condition of development, only half the flowers showing their anthers, while the female flower buds had their pretty purple stigmas protruding from nearly all of them. Mr. Meehan remarked that his observations the past few seasons had been so carefully made that he hardly regarded confirmation necessary, but believed the further exhibition of these specimens might at least serve to draw renewed attention to his former communications.

THE CRAB APPLE.

Pyrus coronaria, the native American crab apple, differs from *Pyrus malus*, the cultivated species in many botanical characters,

among which are that the leaves are often slightly lobed, as in some hawthorns, the veins are straight and the petioles very slender. The old world species never has any tendency to be lobed, has the leaves thick, the petiole stout and the veins incurved. In the American the petals are long clawed, and they are short clawed in the European. There are other minor differences recognized by botanists. It can be popularly distinguished by the delicious odor of the fruit, which has obtained for the species the common name of "sweet scented crab."

So far as we know it has never been improved, though it well deserves a trial in that line. Hewes' Virginia Crab, is but a small variety of the old world species, at least this is our belief without any specimen before us. If it be of the American species the fact would most probably have suggested itself to the writer in former examinations. By the way, who was Hewes? Where did he find this crab? Such a magnificent cider apple deserves a niche in special history.—*Ed. G. M.*

THE INFLUENCE OF POLLEN UPON THE FRUIT OF PISTILLATE VARIETIES
OF STRAWBERRIES—BY J. T. LOVETT, LITTLE SILVER, N. J.

As is well known, many great discoveries—in fact, those of most importance—have been made only after the thing discovered has been presented to countless thousands, *e. g.* the attraction of gravitation, the power of steam, etc., when all mentally exclaimed, "Pshaw, why did I not think of that myself!" Thus it was with perhaps the greatest discovery in horticulture, viz:

The blossoms of pistillate varieties must be fertilized by the pollen from a perfect or hermaphrodite variety to render them fruitful—made upon the grounds of Nicholas Longworth, near Cincinnati, Ohio, over fifty years ago.

The problem had baffled the whole horticultural fraternity from the time that varieties of the Virginian species were first cultivated until the discovery was made, as this species produces varieties of both those with pistillate blossoms and those with hermaphrodite or perfect ones. Long since, therefore, pistillate varieties of our strawberries have not only ceased to be barren, but as a rule rendered surer and better croppers than those with perfect or hermaphrodite flowers. Remembering this, it appears to me a little singular that it remained for our own time to discover the fact—almost, if not quite as important—that the characteristics of the fruit of a pollen bearing plant are transmitted to that of pistillate ones through the fructification of their blossoms.

The phenomenon was pointed out to me by a neighbor, the late Benjamin P. Markham, an eminently observing fruit grower of wide experience, in 1878. From that time forward I have been experimenting, and observing closely the influence of pollen upon the fruit of pistillate varieties of strawberries, and have learned that through this is transmitted not only the flavor, but form, size, color, and *texture* of the pollen bearing variety as well. This is the case to such an extent as to render an entirely pistillate variety like the Crescent so totally different when fertilized by two sorts of widely different character, as Crystal City and Sharpless, that it would not be recognized as the same berry.

If, therefore, the grower desires firmness to any other property in his fruit, let him use the Wilson; if large size, use the Sharpless for the fertilizing plants. If he learns that Champion or Windsor Chief will command better prices in his market, if not so dark in color, he has but to use Cumberland Triumph or Kentucky as a fertilizer. The field for producing changes in the fruit of pistillate varieties is therefore boundless. While speaking of fertilizing blossoms of pistillate varieties, I may add that when fruit alone is wanted, the best method to insure perfect fructification is to have every third or fourth plant in the row of the perfect flowered variety with which you wish to impregnate.

"Did you know the variety used as a fertilizer made a difference in the crops?" asked he. "It undoubtedly does, and I know some growers who believe the potency of some varieties on the kind fertilized is much more apparent in some cases than in others. I think I made a mistake in using the Wilson," he said. "This is about a fair sample of the Manchesters hereabout; the only exception I know of is in a case of a neighbor within two miles, who has as fine a bed of Manchesters as you could wish to see, and he used the Sharpless as a fertilizer."

DOES SAP FREEZE.

The theory that the freezing of sap in a healthy branch will cause "blight" is still prevalent. Tender or unripe shoots often suffer or are killed by sudden freezing and thawing in the sun, causing, however, a different effect from the so-called blight. A blighted spot, the size of a hand, often found on the trunks of trees, would be difficult to explain by the "frozen sap" theory. I do not believe that sap ever freezes in a healthy tree. Frost extracts moisture from the plant cells, and if the roots do not extend below frost,

or where they can supply the deficiency, the bark shrivels, and the tree often dies.

HONEY DEW.

We give place to the following from a correspondent of the *London Garden*, in order to call attention to a question we regard as by no means settled:

"Bee-keepers will rejoice greatly at what they regard as honey-dew, the deposit of which is very heavy this year, as aphids are more than usually prevalent, the undersides of the leaves of limes, sycamores, cherries, and most other trees, being quite covered with them, and, as a natural consequence, the foliage below is heavily coated with their excreta, which they exude in such quantity as to form a glutinous paste, and varnish the leaves quite over. Many look on this so-called honey dew as a sort of distilled sweetness brought about by atmospheric influence, and never dream of aphids, or think it is the discharge from any insect, else they would not be found, as I have seen them, licking the nectar off, and appearing to enjoy it, till they knew from what source it came, when they soon showed disgust, and a violent fit of expectorating seized them. Hop-growers, and those connected with gardening, know only too well what honey dew means, and when they see it, are well aware that the enemy is at work sucking the vital energies out of the plants, and crippling their growth. What is wanted now is a good down-pour of rain to wash the foliage, and cleanse it of both parasites and honey dew; for though the latter may be good for the bees, and go far towards assisting them to fill their hives with honey, it stops the pores of the leaves, and prevents free respiration, and thus interferes with their health."

Now many of us have seen honeyed liquid excreted from aphides, and are therefore quite ready to agree with the notion of the animal origin of honey dew as generally accepted.

But the writer is quite sure he has seen numbers of cases where trees have swarmed with aphides without any honeyed surface to the leaves below them, and on the other hand some few cases, especially on the linden, where no trace of any aphides existed. Only last season he saw the whole brick pavement beneath the shade of two American plane trees in front of the Wills Hospital in Philadelphia, covered with stains from drops of liquid which had fallen from the trees. Myriads of flies were feasting on the sweetness wasted there. So far as the eye could tell at that distance from the ground, no aphides were visible. By the aid of a sun umbrella handle, some of

the lower leaves were gathered, but there were neither aphides beneath or any appearance of varnish on the upper surface of these shaded leaves. Across the street were other plane trees, the branches almost reaching those on the other side, but no sweet liquid were under these as in the other case. It is inconceivable that trees so near together should swarm with aphides in one case, and have none in the other. These street trees were left with regret that they were not growing nearer where some closer attention might be given towards unraveling the mystery. It seems, however, inconceivable that even though aphides should have been in extraordinary numbers on the tops of these trees, they should be able to excrete enough honey, not only to cover the myriads of leaves with a gloss below them, but have still some to spare to splash the brick sidewalk as with a hose. Though we have to give some sort of an assent to the aphid origin of honey dew, we cannot help feeling there is something back of it all not yet explained.—*Ed. G. M.*

INFLUENCE OF GRAFTING.

As we have understood this question of the influence of the graft on the stock or the stock on the graft, it has rather had reference to a kind of hybridization. In other words, can the character of a tree be so changed by grafting as to produce such marked variations as could not follow from mere laws of nutrition alone? There have been some few observations made which seem to indicate the possibility of some such influence, but we must say that these have been so few that no general law that such is the case can be fairly drawn.—*Ed. G. M.*

SPORTS.

The better to learn the origin and understand the nature of sports, let us look at a few well-established physiological facts. In regard to the circulation of sap, nearly all writers now admit that the crude sap ascends from the roots through the sap-wood to the upper sides of the leaves, where it is elaborated by coming in contact with the air, and then passes into the veins on the under side of the leaves, to be conducted into the vessels on the bark, where it is digested and assimilated on its way into the cambium, where it forms the protoplasm of life principle which circulates to every part of the plant. From this protoplasm originates, not only all sports, but all growth of plant life.

PROGRESS OF PLANT KNOWLEDGE.

Hippocrates described 234 species, Theophrastus followed with 500. Pliny knew, as well as can be made out now, 800. Tonnefort, at the beginning of the last century, described 10,146. Many of these had to be united as not distinct enough for modern science, till at the death of Linnæus 7,294 had been described. De Candolle, in the Theory of Elementary Botany, made 30,000 named species. Lindley, in 1853, gave the number as 92,920. Now in the neighborhood of 150,000 species are known, with possibly an equal number not yet known. Thus figures the *Revue de l'horticulture Belge*.

The root, like the stem, branches and divides, until towards the extremities we find numberless rootlets which correspond to the twigs and leaves at the opposite extremities of the tree. Going a step farther, and by the aid of the microscope, we find that the breathing pores, or stomata, of the leaves, have their equivalents in the so-called root hairs. These hairs are delicate elongations of the surface cells of the rootlets, barely visible to the naked eye, but so numerous as to greatly increase the absorbing surface of the root. Through root hairs is absorbed the water, with food materials dissolved therein, for the use of the plant. Between roots and leaves there constantly goes on the operation of supply and demand, though located at the opposite extremities of the plant, so nicely are their powers adjusted that, disregarding outside influences, the amount of water in the plant always remains nearly the same.

BLIGHT.

It was left for the microscope with its modern improvements, and to the accuracy of investigations made with it, to reveal the true nature of this mysterious disease. In a letter to the *Gardener's Monthly*, (August, 1875,) Dr. Hunt says: "I have examined those pear branches, and find that the black color is caused by a fungus.

* * * I cannot name the fungus. Repeated observations only can determine that question. * * * I have made thin sections of stem, bark, fruit and leaves, and removed excess of black color until I could send daylight into every cell; and then under * 500 the parasite reveals its presence."

For the next five years little progress seems to have been made, except that the German and French naturalists, principally Cohn, Magnin, Pasteur and Frische, continued to publish their experiments and discoveries. In 1880, Professor Burrill announced that "blight"

in the pear, apple and quince was caused by bacteria, the smallest living organism known. He found that they destroy the stored starch grains, causing the same to ferment, leaving the cell structure apparently unharmed. With the poisoned sap he inoculated healthy trees, of which over sixty per cent. showed signs of "blight," clearly proving that bacteria is the cause and not the effect of the disease. No counter evidence has been brought against these experiments of two years ago.

About twenty years ago, Derlaine stated that bacteria belonged to the vegetable instead of the animal kingdom, as was the belief up to that time, and only a few years since it has been proven that they attack and destroy living matter. They increase by "fission," dividing in the middle, under favorable circumstances, once every hour, and sometimes even oftener. Once an hour would be at the rate of sixteen and a half million in twenty-four hours. A few species are also perpetuated by spores, like fungi. The most favorable temperature for their rapid development appears to be about 95° Fahrenheit, together with plenty of moisture.

Prof. Burrill is of the opinion that this kind of bacteria, *Micrococcus amylovorus* B., is rarely found floating in the air, being extremely viscid, and usually mucilaginous, when moist. In this condition they would be readily carried about by insects. The most likely to aid in their dissemination would be the true bugs, *Hemiptera*, who obtain their food by the use of a sharp beak, with which they puncture the bark to suck the sap, and by coming in contact with the sticky, poisonous fluid, may carry it from one branch or tree to another.

The following is Burrill's description of the species: *Micrococcus amylovorus*.—Cells oval, single, or united in pairs, rarely in fours, never in elongated chains; imbedded in an abundant mucilage, which is very soluble in water; movements oscillatory; length of a separate cell, .00004 to .000056 inches; width, .000028 inches; length of a pair, .00008 inches; of four united, about .00012 inches."

It is quite evident that the disease is one of the outer cellular bark, as the bacteria are unable to penetrate through the best cells, and can spread up and down only by working their way through the apparently solid cell walls. There being no such things as sap veins in plants, analogous to blood veins in animals, the spread of the disease from the point of attack must be comparatively slow.

Soil, situation, exposure, etc., have little or nothing to do with the disease. That some varieties are more subject to its attacks than

others is well known, and has been fully discussed by your Society, as well as lists published of those most exempt.

Of the different modes of cultivation, the one that produces a moderate, healthy growth should be preferred to that of excessive growth. It is quite apparent that trees highly stimulated by manure, severe winter pruning, and clean cultivation are most subject to "blight." The orchards uniformly most exempt from "blight" that have come under my observation were those well cultivated in grass, i. e., the grass kept short by repeated cutting, (never allowing the grass to ripen or go to seed,) with occasional, at least biennial, top dressing of barn-yard manure, or other fertilizers. In short, treated like a lawn. The annual growth will be moderate, but healthy; quite different from those stimulated to excessive growth by clean cultivation and the stereotyped annual cutting back of two-thirds of last season's growth.

Remedies: Eternal vigilance and a sharp knife. Carbolic acid is extensively used to destroy bacteria; it may be diluted with 1,000 parts of water to one of the acid. Quinine is also used. Cold does not kill them, but activity ceases at or near the freezing point. Frische claims that 123° Fahrenheit below zero will not kill them. In the adult state most bacteria are destroyed in water heated to 150° Fahrenheit; spores have been known to survive a short immersion in boiling water.

I have often prevented the increase of poisoned parts by carefully cutting off the outer bark with a sharp knife, and applying linseed oil. This must be done very soon after the appearance of "blight."

A careful examination should be made after every warm rain, and warm nights with dew. Such examinations should be made at least once a month during the summer. Any parts showing signs of the disease should be removed immediately; if an ordinary sized limb it had better be cut off; if on the trunk or large branches, the outer bark may be peeled off and the spot covered with oil.

All diseased parts removed, branches and bark shaved off should be consigned to the fire at once. It requires close observation to detect the disease in the first stages, the bark turning black is rather a second stage; and also to make sure that the cut is below all the affected parts.

In the case of contagious diseases among animals caused by bacteria, it has been found that the bacteria may be cultivated, whereby it loses most of its poisonous qualities, and animals inocu-

lated with it take the disease in a mild form and are ever after free from that disease.

Now let us hope that some genius will contrive a way to cultivate the species of bacteria under consideration, so that by inoculating pear trees with it they would be "blight" proof. This would open a field for a new profession—a tree doctor.

SUB-SOILING.

Professor J. W. Sanborn, Dean of the Missouri Agricultural College, made some experiments bearing directly on this subject, and he reported the results under date of November 14, 1883, as follows:

As there is, by some, misconception of what subsoiling is, I will explain that it consists of following an ordinary turning plow by a plow of special construction, that loosens the soil to the desired depth below the point moved by the turning plow, and yet merely loosens without turning or bringing to the surface the subsoil.

Two areas of similar land, side by side, of one-tenth acre in area, each, were plowed 7 inches deep. No. 1 was subsoiled 9 inches deep, or stirred 16 inches deep in total.

September 12th, when the severe drought had become very pronounced, I drove an inch gas pipe 15 inches deep in four places on each plat, mixed thoroughly the dirt of each plat and tested for moisture. From 960 grains of subsoil plat 97 grains of water were evaporated, or 10.10 per cent. From 960 grains of soil of unsubsoil plat but 80 grains of water were lost, or 8.33 per cent.

This is 1.77 per cent. less moisture, or for 15 inches of soil 110,625 lbs. water, an amount of much importance. The yield per acre was for subsoiled plat, of corn, at 76 lbs. per bushel, 70.1 bushels, and of stover or fodder 4,734 lbs. The unsubsoiled plat gave of corn 49.3 bushels and of stover 4,022 lbs. That this result is no accident, I am satisfied, for the proportion of corn to stover falls heavily off on the unsubsoiled plat, showing that at a critical period the subsoiled plat furnished moisture and, probably, excess of plant food over the unsubsoiled plat, to mature a heavy proportion of corn to stover. On subsoiled plat the proportion of corn to stover was per bushel of corn 67.5 lbs. stover. On unsubsoiled plat stover per bushel corn, 81.6 lbs.

ADING THE DRAFT OF FLUES.

Under date of December 18th, a correspondent from Sarnia, Ontario, furnishes the following excellent hint: "About this time many a poor florist will be grumbling if he has smoke flues—how they

smoke. Stop it by making a small hole in the chimney, say for seven inch thimble at the base. Put a few handfulls of shavings in the chimney. Light them. Then start the fire in the furnace, and everything will work like a charm. No smoke and good draft."

During the last ten days we have had cold, damp, disagreeable weather. At the commencement of this kind of weather my furnace refused to draw, and consequently the pipes used to heat the greenhouse remained cold. I asked everyone whom I thought ought to know what the matter was, and for a remedy. I got plenty of solutions with remedies, most of which I tried with no success. At last I thought of the manner of starting up a sluggish fire we used to practice in the anthracite coal regions of Pennsylvania, viz., to throw cold water on the burning coals. This I did by putting about a quart of water in a manilla paper sack and tying it, then tossing it into the fire, closing the furnace door quick, and in an instant it exploded, clearing the furnace and pipes of the accumulated gas, and in twenty-five minutes the pipes, which had been cold for thirty-six hours, were hot, and the furnace stopped smoking at once. I have tried this four times during the past ten days with the same effect each time, and while the wind was in different directions, so now my pipes, which are cement drain tiles, heat as well or better than the first day I made a fire. Should any one who uses soft coal experience like difficulties with myself, I am sure a trial of my experiment will prove satisfactory.

CIDER.

SOME FACTS ABOUT CIDER.

Though the apple crop is, in a few sections, a very good one, as for example, in some portions of Southern Illinois, generally it is a failure, and therefore cider, and especially good cider, of this year's crop, is pretty sure to bring a fair price. For this, among other good and sufficient reasons, it seems to be a proper time to state some not generally recognized truths concerning cider and its manufacture.

To the average person, anything and everything is considered cider which is made from apples, whether sweet or sour, good or bad,

and no particular objection is made to its quality, if it has not too distinct a flavor of unripe or rotten fruit, and is not too much diluted with water or dosed with drugs. Another class, better informed, demand that cider be made of the pure juice of ripe and sound apples; that the manufacture shall be conducted with celerity and the strictest regard to cleanliness; that careful attention be paid to it during the process of fermentation and subsequent storage. If these things are attended to they accept the liquor, whether it be good, bad or indifferent, as they accept the inevitable in many other matters, and credit or discredit the result to the character of the season, which, in truth, has a great deal to do with the quality of the fruit, and therefore of its manufactured products.

A third and a select class, understanding the subject better, demand something more than all these things, asserting that in order to make good cider the following conditions are essential: The only varieties of apples fit to make good cider should produce a *must* (name for the juice as it issues from the press) containing an abundance, 1st, of sugar; because by fermentation it is transformed into alcohol, a principle which renders the beverage stimulating and generous, and assists materially in its preservation. 2d. Tannin, a vegetable substance, having a bitter and astringent savor, playing the part of a clarifying and anti-putrid principle, and imparting to the liquid tonic properties. 3d. Mucilage or fruit jelly, which lends to it fullness and smoothness of body, and assists also in its preservation by preventing the alcohol transferring itself into acetic acid. 4th. Perfume, that the cider may have an agreeable taste, and, after long keeping, develop a peculiarly agreeable boquet. 5th. Acidity, but not too much of it, else the cider becomes disagreeable for drinking, and it is at the same time injurious to the digestive organs. A *must* so constituted should analyze about as follows to the thousand ounces:

Water, - - - - -	800
Alcoholisable sugar, - - - - -	173
Tannic acid ('Tannin), - - - - -	5
Mucilage or jelly, - - - - -	12
Free acids, - - - - -	1
Other matters, - - - - -	9

Total - - - - - 1,000

The density of the juice or *must* should be about ten degrees Baume. This may be considered the standard for perfect cider, and all cider will be good or bad, in proportion as the original *must* approaches or departs from it.

It will be recognized at once that few, if any of the best or common eating or cooking apples will produce a *must* which will meet the above requirements. This fact is so well recognized where the manufacture of cider has reached a perfection we know almost nothing of; that apples are divided and cultivated under two distinct classes (1) for cider, (2) eating or cooking. Our apples contain either too much acid, too little tannin, or too much juice not sufficiently rich in sugar, or are partly or wholly deficient in jelly.

The nearest approach to a perfect cider apple is the common Siberian Crab when ripe; and everybody knows that crab-apple cider, when carefully made, is vastly superior to any other. This is because it contains a fair amount of alcoholisable sugar, a very decided quantity of tannin and jelly beside; the last two almost wholly wanting in our common and uncommon eating apples.

The Snow apple, or Fameuse, for example, yields a rich and heavy *must*, with the right proportion of acid, but wholly lacks perfume, and has little tannin and less pectate or jelly. The Rambo, wanting in jelly and tannin, and too little acid, produces a *must* rich in sugar and perfumed in the highest degree; but the cider made from both rapidly becomes "heady" by the change of the sugar into alcohol for the want of tannin, and subsequently is quickly converted into vinegar, there being little jelly to avert the transformation.

For a perfect cider, or one closely approaching it, for the reason given above, probably one-third Siberian Crabs, one-third Snow apples and one-third Rambos, would yield the best results. Both Smith's Cider and the Little Romanite make excellent cider, as the common estimate of cider goes, but the product lacks the astringent principle and the perfume, without the presence of which the beverage is not at its best. Besides, unless heated to 170 degrees, or 180 degrees Fahr., which coagulates and precipitates the albuminous matter, and thereafter there is an addition of some mineral salt of soda, or lime, the sugar speedily changes into alcohol, and later the latter into acetic acid, and it is cider no more, but weak vinegar. But cider which has been first boiled and then salted in order to keep it like the other, is cider no longer, whatever else it may be.

The native crab (*pyrus coronaria*) abounds in tannin, but also in acid, and has almost no sugar, else it would be, whatever may be said to the contrary, a valuable addition, in limited quantity, to the common run of apples intended for cider. But there are other fruits which contain tannin without the acid, when ripe, and these are the

choke-cherry, persimmon and others. Where the experiment could be made without inconvenience it might be worth the while to make a certain portion of either, or both, and mix them with the apple pomace previous to pressing.

It is not expected, of course, that cider-makers generally will or can abandon old methods and take up with the new as here set forth. But they may learn something from the facts stated, which so far as their scientific side is concerned, have been borrowed from recent French publications. The root-bark louse (*phyloxera vastatrix*) threatens to exterminate the vine in France and the south of Europe, and hence the investigation on the subjects of cider apples and cider.

It was not the intention to go over the whole subject of cider-making in this article, only to point out some not well recognized facts—among them that sugar alone in the *must*, from which results alcohol, is not the only preservative principle, but resistance to decomposition in good cider, is about equally divided between the alcohol, the tannin and the pectate; and no cider which does not contain these, together with perfume and the right amount of acid, is either a wholesome tonic, or agreeable to a correct taste and a healthy stomach.

MISCELLANEOUS.

ENRICHING ORCHARDS.

If there is any doubt of the fact that judicious manuring of the apple orchard will repay labor and expense, or that the successful raising of the apple crop depends upon proper manuring, then we may just as well doubt the virtue of manure upon any other crop of the farm. Yet how seldom do we see this estimate given to the enrichment of the apple orchard? And if it is the main object to obtain a crop of hay, this manuring of orchards performs a double service. But how seldom do we see this important part of the farm crops treated thus generously? And then when the crop fails it is attributed to other causes that have no existence, especially the idea that apples won't bear any longer in our soil. Now, the fact is, apples are just as well suited to the soil of Pennsylvania, and we may

add the soil of the middle States generally, as they are to the soil of any other State or section of country. We manure the land for wheat, corn, potatoes, &c., every year, or we should not expect a crop, nor should we expect apples in the absence of occasional fertilizing.

Many farmers entertain the idea that the manure applied to orchards is so much thrown away, which ought to be used on the regular farm crop, and thus habitually neglect the orchard, and then complain that it is useless to attempt to raise apples, as if the soil for such fruit had run out! Experienced growers of fruit, and especially apples, know how fallacious such an idea is; they know that the crop responds to the effects of a dressing of manure as readily and as surely as does any other crop, and they would no more dream of neglecting their orchards in this respect than any other portion of their farm. A top dressing of almost anything applied in the fall or spring will surprise one in its effects. For spring, a fine dressing should be bestowed, either of wood-ashes, if it can be obtained, wood pile or road-scrappings, washing from ditches, good pulverized muck, or commercial fertilizers. In autumn compost or well-rotted barnyard manure with the lumps crushed is to be preferred.

Farmers who hesitate to enrich their orchards should inform themselves upon the subject from successful fruit-growers, not only as to the mode of manuring their orchards, but as to the best varieties of apples for the locality, as some sorts, as pears, will do much better in one locality than in another, though the distance may be only a mile or two.—*Michigan Farmer*.

A correspondent of the *Farmer and Fruit Grower* recommends the use of salt as a remedy for the red rust which attacks blackberries and raspberries. His treatment is to throw salt freely among the old canes, a plump handful at the roots of every one where he detects signs of the disease. He does this once a week as long as any indications of rust appear.

In the report of the Western New York Horticultural Society, H. T. Brooks, of Wyoming county, says a large grape grower of that county has used salt as a fertilizer for his vineyard for many years, with the best results. He reports that it makes his fruit "firmer, plumper, and better in every way."

Never forget that an orchard, as surely as a corn field, consumes the fertility of the soil, and that to starve the soil is as sure to prove unprofitable in the one case as in the other. Trees may live on from year to year upon what they can draw from the exhausted soil; but

it will prove just as fallacious to expect a good crop of fruit under such circumstances as to expect a full crop of corn or other grain under similar circumstances.

We find a particular member of the Elmira (N. Y.) Farmers' Club reported in the *Husbandman* as saying: "My experience is that ten loads of barn manure, used with \$5 worth of phosphates and potash to the acre, are worth more than twenty-five loads without the phosphate and potash. Barn manure is often short in phosphates and potash." There is a great deal of truth in this. So much has been said and written about nitrogen in manure, that phosphoric acid and potash have come under neglect. Plants require a certain amount of each of these and other elements; a surfeit of one or not enough of another, is a direct loss. The same speaker reported a great success with a mixture of lime and potash as a top-dressing for grass.

A ton of barnyard manure of the average sort contains not far from 13 pounds of nitrogen, $6\frac{1}{2}$ pounds of phosphoric acid, and not far from 15 pounds of potash. These three substances are the ones of greatest fertilizing worth, and for them the manure is cared for and applied to land. It is not said that the rest, and great bulk of the ton, is of no use, but the manure would be of no great value without these. Harris, in his talks on manure, says: "We draw out a ton of fresh manure and spread it on the land in order to furnish the growing crops with $12\frac{3}{4}$ lbs. of nitrogen, $6\frac{1}{2}$ lbs. of phosphoric acid, and $13\frac{1}{2}$ lbs. of potash—less than 33 lbs. in all!" He says we should try and make richer manure, because it costs no more to draw out and spread a ton of manure containing 60 lbs. of nitrogen and the other essentials in like proportion.

VINES ON HOUSES.

Asking a friend, who had a beautiful rural residence, why she did not plant vines, or creepers as the English would say, over the walls, she replied by referring to a mutual acquaintance who had done so with the result of making the walls so damp that the vines had to be cut away. It so happened that we knew all about the affair. The vines were allowed to cover the eaves, over the gutters and push their way in under the shingles of the roof. Thus obstructed, the water made its way down into the wall, from the top under the roof, and of course the wall was wet. Vines should always be kept cut down below the roof. It is a little trouble to do this once a year, but we cannot get even our shoes blacked without some

trouble. Those who know how beautiful and how cosy looks a vine-covered cottage will not object to the few hours' labor it requires to keep vines from stopping up the gutter. Vines really make a wall dry. The millions of rootlets by which they adhere to the wall absorb the water; and an examination will prove a vine-covered wall to be as "dry as an old bone." One great advantage of a vine-covered cottage, not often thought of, is that it is cooler in summer and warmer in winter than when there is but a mere naked wall. There are only a few vines that will cling of their own accord. These are the varieties of the English Ivy, the Trumpet vine, and the different kinds of Ampelopsis; and even the English Ivy will not stick to smooth walls. But if the Trumpet vine or the Ampelopsis be planted with the Ivy, the latter will cling to the other vines as well as to the wall, and then keep safe hold. The evergreen *Euonymus* makes a good self-climbing vine, though not as much used as it really deserves to be. In order to have the beauty of variety which the great number of hardy vines affords, it is best to have trellises over the face of the walls. These are best made of strong galvanized wire. Iron hooks should be fastened, by melted sulphur, into stones sunk under ground, and others up under the eaves, and the wires attached to these. Cross wires can then be fastened to these, so as to make the meshes about a foot apart. Properly done these wires will last a lifetime, and the vines will, with a very little help, make their way of their own accord up the wires. Recently the writer noted a plant of the red-berried *Pyracantha* trained up over wires in this way. Evergreen, and covered by bright red berries, few things could make a cottage wall more gay. Wires, trellises, and other preparations can be made for this vine planting before the spring-time comes.

THE ECONOMY OF A LAWN MOWER.

In answer to the inquiry as to the cost of keeping an acre properly cut for the entire season, we may allow an average of once a week from the first of May to the end of July, and once in two weeks for the two succeeding months, or seventeen cuttings in all—which is rather more than the average, except in warm and moist summers. As it would require seventeen half days for the acre, or eight and a quarter full days, the cost of keeping the acre in good order would be \$10.31. From this amount, it may be easily understood how small the expense is for the small dooryards of village residences, or limited grounds in country places.

The best hand lawn mowers work at least four times as fast as the old lawn scythes, do the work much better, and with greater uniformity, require less expenditure of labor, and less skill is needed in using them. They have proved a most important aid in improving and keeping in neat order the surroundings of country and town residences.

THE FOUNTAIN PUMP.

We recommend the use of Whitman's Fountain Pump because a lady or child can use it, and it is very serviceable for washing windows, carriages, sidewalks, trees, vines, etc., etc. People cannot exercise too great care in deluging insects, potato bugs, canker-worms, etc., from early vines. This Fountain Pump is also useful for washing horses, it is likewise of great utility to the bee-keeper in controlling bees; in fact it can be made available in almost every instance where water and a hose are desired.

THE DECORATIONS FOR THE FAIR.

Most of the fair grounds of the county associations have a building devoted to the display of flowers and fruits, usually called "Floral Hall." This is often, at the time of the fair, a rather barren place. Those who take an interest in the exhibition should provide for its decoration. If they have any showy plants, that can be spared, such as cannas, castor oil plants, or other decorative specimens, let them prepare these well in advance for the fair. Nail kegs, or half-barrels cut down to the proper size, will answer for "pots." Carefully take up the plants and place them in these, giving a supply of good soil. Keep the plants in the shade until they recover from the shock of removal, and then promote their growth by applications of weak manure water. The plants must be set where violent winds will not injure them. A few large specimens distributed about the hall, will go far to relieve its barren appearance.

BEAUTIFYING SCHOOL HOUSES.

The friends of education in this county are often compelled to admit that the mental training of the child is not such as the time spent in school might fairly warrant. Especially is this true of our country schools. A remedy for this deficiency can, perhaps, be best found in a study of its cause. This I believe to be the absence of surroundings calculated to cultivate taste and quicken the powers of perception. So long as we allow the contents of books to be the sole

factor in the education of our children, ignoring the influence of beautiful and elevating associations, just so long may we expect to be disappointed at the results shown by the school life of the average pupil. We should give our boys and girls something more inviting to look at than four bare and staring walls.

It is no uncommon thing to see a shutterless school house standing naked and forlorn upon the open prairie, unshaded and unadorned by tree or shrub of any description. The interior, too, of the building is often as bleak and barren as the ground around it.

Let us relieve the monotony of such scenes by enclosing ample grounds and adorning them with grass plots, shade and other ornamental trees. It is an old saying that men learn to do things by doing them, and we may justly add that children learn to appreciate refinement and beauty by being in daily contact with them. I hold that a bouquet of flowers on the teacher's desk is a greater civilizing agent than a whole wagon load of rods. Let us cultivate not only the eye but also the ear. The daily exercises should be enlivened by music. If an instrument can be added to the school furniture, so much the better. A few inexpensive pictures will add greatly to the attractiveness of the room. The cost of these improvements would be insignificant compared with the benefit conferred. Beautiful sights and sweet sounds will go quite as far in giving tone to the character of the future citizen as the humdrum of class exercises.

A Sunday school room can be beautifully decorated at a slight expense, if the children will give their services, and the older boys will gather the evergreens. Make a great many yards of evergreen garlands by tying sprigs of hemlock, ground pine and laurel leaves together upon a strong rope, such as is used for clothes lines. Fix nails or hooks, at regular intervals, close to the ceiling, and suspend the garlands in festoons. Take flour-barrel hoops, or make hoops of crinoline steels, and cover with evergreens for wreaths. Hang these on hooks put into the walls at regular distances, or over the top of each window place a hoop. Cut a dozen or more pieces of scarlet, blue, and gold-colored silks, or silk-finished silesias, twelve or fifteen inches in length, and eight or eleven in width, to make small banners. Hem them on three sides, and make a casing at the top for a bit of rattan, as previously directed. Take sheets of gilt paper and draw on the back, from a good pattern, the letters you desire to make into sentences, such as "Christmas Greetings to All," "Peace and Good Will." Cut a deep fringe from the gilt paper, and edge the banners either in points or straight across. Hang the banners with

red woolen braid, or handsome ribbons or cords and tassels—with tassels, either cut from the gilt paper, or of silk or bows of ribbon, at each corner. A small banner can be suspended in the centre of each hoop of evergreens with excellent effect.

THE LAWN.

Now that the lawn mower is so plentifully made, and at fairly reasonable prices, it is much more common to see a nice, velvety lawn than was the case before its advent, a quarter of a century or so ago. We remember how fearful some men used to be that cutting grass so often would kill it, and hence a lawn was anything but a pleasant feature.

To keep in first-class condition, the mower should go over as often as every ten days, and early in the season, if the weather is showery, with a strong soil, every week will be better.

It was one time considered that the clippings could be left on the ground as a mulch, thus returning to the soil what was extracted. This, however, quickly proved a mistake, the dried grass, besides looking unsightly, prevented roots from tiltering out, and instead of its improving, would soon ruin any lawn if left on.

The best way is, as soon as the mowing is done, to carefully rake all up with a rake, made on purpose, and depend upon manuring in the winter to keep up the growth sufficient to form a thick mass of verdure.

There is a small mower, ladies' size, that answers every purpose for small city lots, and it is so easily run, that if there is no man around the place, the young folks themselves can easily do the mowing, and thus have an attractive grass plat in front of the house.

To those who prefer it, there are jobbing gardeners, who take these places to do for the summer, and one man, if of the right kind, can keep a good many places in shape, and the cost will be little for each one. We must confess, however, that this city does not seem very well supplied with this class of workmen. One reason probably is, that there is very little occupation for such "help" in winter, and so, after trying it a time, they drift into some steady occupation, and thus green hands, as it were, are constantly drifting into it.

EDGAR SANDERS.

DISCRIMINATIVE PREMIUMS.

Over and over again we have suggested a reform of the manner in which premiums are given at horticultural societies. They lose half their value to the receiver because no one knows why they receive them. The public does not care to be told that *Primus* had the first premium for cauliflower, or *Secundus* for beets. It cares a great deal more to know what the premium articles looked like, and we feel certain that modern horticultural societies, which in many cases are now dragging along a miserable existence, will never revive till they do something to bring widely before the public the real merits of the successful exhibits.

The Germantown (Philadelphia) Horticultural Society was first founded on the old plan; but it got down so low that it became entangled, as it seemed, hopelessly in debt. It could not even pay the premiums it promised, and even these premiums were scarcely thought worthy of being competed for by good horticulturists, whether professional or amateur. At last scarcely a score of persons attended the monthly meetings. A new departure was inaugurated about four or five years ago, the main effort being to make the exhibits as instructive as possible. The result is that the society is now out of debt, increases its premiums, has better exhibits than it ever has had, and its rooms are thronged during the meeting by all the best gardeners of the vicinity, as well as by numerous ladies and gentlemen of the highest social standing. At the last meeting a new feature was introduced by Mr. David Cliffe, chairman of the committee on awards, in the direction indicated at the opening of this paragraph. In announcing the decisions of the committee he explained to the meeting the various points of superiority, in other words, the reasons for the awards. It was highly appreciated by the thronged assemblage, who warmly applauded Mr. Cliffe at the conclusion. It is something to have such instructive decisions given verbally, and we are sure that that society which shall be the first to go to the trouble and expense of giving such reports to the public, will gain so much in the estimation of exhibitors, that it will never need to go begging for something to fill the hall.

A RURAL REMONSTRANCE.

Old farmer Winrow raised his head,
And laid aside his paper;
His spectacles slid down his nose
And rested on its taper.

“ Well, I declar!” he cried aloud;
“ This beats the very dickens?
They’ve gone an’ shifted roun’ the time,
As sure as chicks is chickens.”

“ I never heerd, upon my word,
Of anything to beat it,
I ra’llly think them city folks
Hev got theer minds unseated.”

“ An’ what is this I read in heer?
Great Cæsar! Save the flock!
They’re goin’ to stretch the hours out
To twenty-four o’clock!”

The worthy farmer scratched his ear
In deepest meditation;
He gazed perplexed upon the clock
With mental agitation.

“ For sixty years I’ve plowed along
As reg’lar as the sun, sir,
An’ used the good, old-fashioned time
Without a hitch, by gum! sir.

“ But times hev undergone a shift,
If I be not mistaken,
An’ some new cranks try every day
To give this world a shakin’.”

“ They string my fields with telephones,
Or some new-fangled trashes,
They send out one-wheeled railway trains
To everlastin’ smashes.”

“ An’ yet, they be not satisfied
With the customs they hev slander’d,
But they must go an’ ‘riginate’
A new an’ fresh ‘time-standard’.”

“ I ra’llly shouldn’t be surprised,
Nor my old woman, ’ither,
If them thar city lunatics
Should drap time altogether.”

"An' some fine day, when we arise,
Our dally race to run,
We'll find that while we've bin asleep
They've turned round the sun!"

"But ra'lly, now, I didn't think
(Nor my Old Sal, I reckons)
They'd go an' steal from Father Time
Some fifty score of seconds."

"Ah! now I see theer little game!
As I'm a calculator,
They've backed their clocks a quarter-hour
To sleep a little later."

Boston Courier.

THE FARM AS A SCHOOL.

Professor W. H. Brewer celebrated the educational influences of the farm, which have largely formed the character of American institutions. Of the twenty-one Presidents, fifteen were farmers or sons of farmers, and five lived on newly cleared land, and these five were the most prominent among all who have occupied the Executive chair. So of others in important public positions of our past. The country affords certain facilities for making strong practical men that cities do not possess. The farm is a laboratory where the student sees and handles the things he is learning about. He is stimulated to ask questions; to observe and investigate. On the farm the child early learns that he can do something that is useful, that will save the labor of others. He is early identified with the workers, and learns to look forward for results beyond the immediate moment. He helps put the seed in the soil and sees the waiting for the harvest; sees the next year's wood cut and piled this year; sees that fences, drains and barns are built for the future. He learns to be self-sacrificing now, that he may have an abundance at some future time.

There is an element of forethought in all this, and in everything which encourages economy and thrift. He sees his patch of potatoes or his calf growing, and learns the true meaning of increase and interest. Factories have to be managed much alike to gain success, but farms may be managed by various methods and each may give fair return, and the child on the farm is thus educated to observe the varying methods and to choose wisely between them. The country boy reads more than the city boy; he has fewer things to draw his attention away from books. A great deal of the attainments gained by people of a cold climate is due to the fireside studies of which the people of warm climates can know nothing. Finally, the

education acquired on the farm will be the salt that will preserve our country. The dangers to a representative government come from the cities. The safety of the nation lies in the ownership of land by a large number of persons.

FARMER'S BOOK-KEEPING.

One of the best arguments I have seen on this point was in the *Country Gentleman*—that was, it helps to train the rising generation in correct business habits. This is a very important consideration, and should induce a large number of farmers, even though late in life, to begin this work. If you cannot attend to it yourself, or do not feel like taking the trouble, and have boys or girls, buy a blank book and turn the work over to one of them, taking, at least, sufficient interest in the work to see that the accounts are kept correctly and in a business-like manner. Nothing that you can do will go so far toward the forming of good habits and teaching lessons in economy essential to the right training of every person.

You cannot expect boys or girls to appreciate the value of money, or know how to save and spend economically, unless they have had lessons in that direction. Neither can you expect them to keep a correct account of income and expenditure if you have not taken pains to instruct them.

We are all aware that loose, careless farming has had its day; and that a successful farmer must of necessity be a business farmer. Knowing how and when to sell a crop is now fully as important as raising one. This can only be learned by forming business habits; nothing is more essential. There are few farmer's boys or girls but would take pride in such work; with a very little help and encouragement, they would gladly attend to all the details, and take a keen interest in having the work correctly and neatly done. Give it a trial, and after one year the satisfaction you will experience in knowing just how much you have made and how you made it, as also what you have spent and in what manner, will be such that you will be very loth to give it up. And your children will at the same time be reaping the advantage, and feel more interest in the work of the farm.

N. J. SHEPHERD.

AN EPITAH.

Ben. Perley Poore furnishes the following to the *American Cultivator*: In planting fruit trees this fall they should be well manured in the hole, and there should also be a bountiful surface dressing of well rotted manure. Of course, a wise man who buys a fruit tree

gets it of some neighboring nurseryman, and will not have the next year to place the following epitaph in the center of what he had hoped would be his orchard:

Here stands
The last vestige of
A Western Orchard:
Most Worthy Fruit Tree, born, 18—,
Diseased by Strong Drinks and Stimulating Food,
In its native home, Western N. Y.,
It was sent East,
Where hopes were entertained of its recovery;
But the *Heart Disease* was so strongly
Imbibed through its entire system,
That it became dangerously ill in its passage East.
With good Earth protection it withstood
The rigors of the first season;
But the following spring
The scorching sun and piercing winds
Drew the life-blood from its vitals.
It died in March, 18—.
Every needful care was granted for its relief;
Its body was embalmed in lye and soap suds,
And was wrapped in straw;
But the disease was previously so firmly seated
The remedies were insufficient.
A change of climate and exposure
Proved inexpedient.

THE LARGEST OF APPLE TREES—BY H. C. HOVEY.

In a wild state the apple tree seldom grows to great size, the largest specimen of the American crab apple that I have seen being but twenty feet high, and having a trunk but a foot in diameter. The average size of the cultivated tree, under favorable conditions, considerably exceeds this, and specimens are not rare with a spread of forty feet, and a trunk two or three feet through. Such are to be seen on the old farms of New England, relics of the days of hard cider and the best of vinegar. It has been discovered that these old orchards, whose fruit long ago ceased to be of marketable value, make excellent kindling wood; and it is a fact, that many of the largest trees are thus disappearing in smoke.

While visiting such an orchard near New Haven, Conn., not long ago, the farmer, perceiving me to be taking notes as to the

dimensions of his trees, told me that probably the largest apple tree in the world was to be seen on the farm of Delos Hotchkiss, in Marion, Conn. I need not give the size as originally stated by my informant, and which was, like most such matters, exaggerated; for I have just had exact measurement taken, as follows:

Circumference of the trunk, near the ground, 15 feet 3 inches.

Circumference of the trunk, 3 ft. from ground, 13 feet 9 inches.

Circumference of the trunk at the forks, 16 feet 2 inches.

Circumference of two main branches, 10 feet 4 in., 8 ft. 8 in.

Circumference of nine smaller branches, 4 to 6 feet each.

Height of tree, 60 feet.

Diameter of tree top, 104 feet.

A peculiarity of this tree is that it is what is termed "an alternate bearer;" five limbs bearing one year and four the next. The usual yield from the five limbs is about 85 bushels, although in a single instance it reached 110 bushels; and the four limbs vary from 35 to 40 bushels. The fruit is said to be excellent for winter use, though on this point I can only speak from hearsay.

PREMIUMS AT HORTICULTURAL EXHIBITIONS.

The Georgia Horticultural Society has adopted a by-law which provides that no medal, diploma or money shall be awarded by this society as a testimonial of excellence for any fruit, plant, flower or vegetable offered for exhibition. The verdict of the special committee shall be the highest commendation of the society. We should hardly suppose that such a great departure from established custom will be a success. But there is nothing like a practical test, and we are glad the Georgia society undertakes it.

It seems to us, the true line of reform is in discriminating verdicts, the jury giving the reasons for the excellence, and the society taking the steps by wide publicity to do honor to their own verdict and to the merits of the exhibitor. The most praiseful verdict is of little satisfaction to the exhibitor if he has to put the record of it between the covers of some book in his library. To be of any real value to him he must "blow his own horn," in regard to it in the end. If the societies were to take this "blowing of the horn" in their hands, it might then be some fair set-off for the lack of money premiums. At any rate, we are glad that the action of the Georgia society, looks like the beginning of the examination into the old stupid system of competition which we have so long urged as needing reform.

MISSOURI AS A FRUIT STATE.

It is not unlikely that Missouri will hereafter be justly regarded as the best fruit State in the Union. Its reputation for producing grapes, peaches and the various small fruits is well established. The wine made from Missouri grapes is equal to that manufactured in any country this side of Hungary. Missouri pears are nearly as fair as those produced in California, and are of much finer flavor. Missouri apples are at last fully appreciated. For many years they had only a local reputation. Last year they became noted in many parts of the world. They reached both the Atlantic and the Pacific coast, and gave excellent satisfaction wherever they were sold. Large quantities of them were sent to Canada, where they were shipped to England and Scotland, and sold as Canadian apples, which had an excellent reputation. They endured transportation well and kept a long time in good condition. The reputation they gained last year will insure ready sales in the future. The soil and climate of Missouri are both very favorable for fruit. The abundant forest affords protection against the winds that do so much damage to fruit trees in the prairie States. The facilities for making good cellars for preserving fruit are unsurpassed in any State in the Union. With the present facilities for transportation, the fruit can be sent by rail or by boats to any part of the country at comparatively small cost. The demand for fruit in Texas and Colorado is now very large, and Missouri is well situated to supply it. Mississippi river boats can take fruit from Missouri to Minnesota and Louisiana to good advantage.

NOVELTIES.

It costs so much to test different varieties of fruits, especially those that are long in coming into bearing, that average farmers cannot afford to do much of it. The safe rule is to plant the sorts that have been found productive and good, and only adopt novelties on the assurance of nurserymen in whom the buyer has implicit confidence.

LIBERALITY IN A GOOD CAUSE.

At the last meeting in the year of the New York Horticultural Society the wealthy men of New York subscribed \$110,000 for the purchase of a permanent building in which to hold meetings and have exhibitions.

While waiting for the committee to make their report, the Pres-

ident took occasion to state that the whole amount of the purchase money for the new building had been raised, and now very much if not all of our anticipated success would depend on our exhibitions. We ought to make them as pleasant and interesting as possible to the public, they were so prompt in responding to the call for funds. On looking over our old charter he had observed that the same class of people had responded to-day as had received our original charter. For instance, here are some names recorded in the act of incorporation of 1822, with whom he had a personal acquaintance: Martin Hoffman, Kinloch Stuart, Thomas Ludlow, Peter Schermerhorn, Maturin Livingston, David Hosack, James Lenox, Gardner Howland, all very familiar names a half century ago; now, all passed away. Of the names recorded in the act but one remains to-day—Walter Langdon, who lives to see the society which he assisted to create in 1822, in its own home at the age of sixty. Seventeen gentlemen had subscribed \$5,000 each and eighteen from \$1,000 to \$2,000 each, and thus the building had been secured to the Horticultural Society. Our success depends now on the interest the working members will take. We must not be behind Boston or Philadelphia. He hoped improvement would soon be made in the building, and considered it a subject for congratulation that we had secured so fine a building in so desirable a locality, and that so little change was necessary to make it ready for our use.

PLANT THE BEST SEEDS.

Col. Marshall P. Wilder, upon being asked to give ten lines of his best thoughts for a live newspaper, took the following text from one of his own addresses: "Plant the most perfect and mature seed of our very best fruits, and as the means of more rapid progress, cross-fertilize our finest kinds for still greater excellence." and furnished the following lines:

Plant the best seeds of every good fruit,
Good fruits to raise, all lands to suit,
Fruits which shall live, their blessings to shed
On millions of souls when we shall be dead.

These are creations that do the world good,
Treasures and pleasures with health in our food,
Pleasures which leave in the memory no sting,
No grief in the soul; no stain on Time's wing.

For fruitage and flowers let praises arise
From earth's utmost bound to heaven's highest skies.
Songs of rejoicing where'er they are found,
Songs of thanksgiving where'er they abound.

PYRETHRUM POWDER.

The editor of the *Rural New-Yorker* has been continuing his experiments with pyrethrum, and reports as the results of this year that several kinds of caterpillars found on pine and apple trees are destroyed by it, if blown upon them through a bellows. This is a most economical way of distributing it, since a very small quantity may be made to go a long way. A gill, for instance, would suffice for an infested tree ten feet high. If the air is quiet one can force a spray of powder through the bellows to a distance of six feet easily enough, while the powder will prove more effectual than if the insect received it nearer the nozzle of the bellows.

The smallest quantity blown into the forming heads of cabbages will kill the destructive cabbage worm in from twelve to eighteen hours. The lightest puffs blown in their tents will kill the tent caterpillar in about twelve hours. At first they do not mind it in the least; then they begin to worry, and in five minutes are in a state of agony or at least of great excitement. In ten minutes they begin to drop to the ground, where in a few hours they will be found dead and dying.

The price of fresh, pure pyrethrum powder is very high, but used through bellows, a small quantity may be made to do such effective service that the saving of time renders its use economical. Speed the day that we may grow our own plants and manufacture our own Dalmatian insecticide!

ANTS AS INSECTICIDES.

A writer in the *Boston Journal of Chemistry* says he watched with great interest last summer the work of a colony of black ants which attacked canker worms on an elm tree in his grounds and was very much gratified with the results. "Two processions of the ants," he says, "were moving on the trunk of the tree, one going up empty, the other coming down, each ant bringing with him a canker worm, which he held fast in his mandibles, grasping the worm firmly in the center of the body. Although the prey was nearly the size of the destroyer, the plucky little ant would run down the tree in a lively way, deposit its booty in its nest in the ground and instantly return for further slaughter. There were at one time as many as forty coming down the tree, each bringing along his victim, and doing the work with apparent ease." Extending his observations, he noticed that the

ants run up the trunk and out on the limbs and from thence on to the leaves of the trees, where the filthy worm was at work, and seizing him with a strong grip at about the center of the body, turned about with the squirming worm and retraced their steps. The worm was dead by the time the ant reached the ground. If this work of the ants is common they must prove valuable friends to farmers and fruit raisers, and should be protected in every way possible.

BEES AND BLOSSOMS.

Prof. A. J. Cook argues that the bee takes nothing essential to the flower when it extracts its mite of nectar, and the chances are that it may accomplish some good in the fertilizing of the blossom. The following is an abridgment of his article upon the subject:

There is not the slightest evidence that the taking of the nectar in any way injures the plant or diminishes the yield of fruit. On the other hand, it is fully demonstrated that in case of many plants no fruit can be secured unless some insect visits the flowers and thus carries the fructifying pollen from the distant or shut-up anther to the waiting stigma. And in case of those plants where the position of the parts of the flowers is such that self-fertilization is possible, it is found by repeated experiments that unless insects visit the plants the yield of fruit will be very much lessened. Darwin proved conclusively in case of squashes and other cucurbitaceous plants and our fruit trees, that to prevent bees' access to the flowers was to greatly injure the crop. Professor Beal has demonstrated the same truth in regard to red clover at our college. Years ago the same senseless, ignorant prejudice that now frowns upon *Fostoria* prevailed in New England. The bees were denounced and the demand made that they be banished. Now the fruit-growers and gardeners, wiser grown, encourage the presence of bees, and often keep large numbers purposely to effect the more perfect development of the seeds which it is their chief business to produce.

Of course some other nectarloving insects may do this work as well as bees, but owing to their limited numbers, especially early in the spring, they alone are not sufficient, and unless there are bees the work will be poorly done in case of most plants, and, as formerly experienced about Boston, a consequent loss will follow. This truth is well illustrated in case of our red clover. Because of the long flower-tubes of that plant few insects other than bumblebees can reach the nectar, and so the perfect fertilization of the ovules demands these bees in great numbers. But all the bumblebees die off in winter except the queens, and so early in spring they

are very rare, consequently the first crop of red clover, as all farmers know, bears very little seed. In August the bumble-bees are counted by thousands and the second crop of clover is abundantly fruitful. Alsike clover, on the other hand, which is supposed to be a hybrid between red and white, has shorter tubes and so is visited by all of our bees, and the first crop is very prolific of seed.

DOUBLE FLOWERS AND SEEDS.

In *Vick's Monthly* we find the following:

"Perfectly double flowers cannot produce seed, since all the reproductive organs are converted into petals. Semi-double or partially double flowers may produce seed, and these flowers possibly may be self fertilized or may be fertilized by others partially double or by single ones, and in either case may form seed, a considerable portion of which produce flowers more or less double. Or single flowers fertilized by semi-double ones may produce seeds capable of similar results. Unusually large and vigorous plants are not particularly favorable for the production of seeds, but rather particularly unfavorable; plants of medium vigor, neither stunted or forced into rank growth, are best. The raising of seeds that will produce double flowers is an art that requires much experience to enable one to practice it successfully, and nearly every kind of flower requires a peculiar and special treatment.

FRUIT IS HEALTHY.

A physician contributes to *Neltner's Fruit and Flower Grower*, the following ideas:

It has been ascertained by careful analysis that apples contain a larger amount of phosphorus, or brain food, than any other fruit or vegetable, and as much nutrition for the system as potatoes. The acids they contain are needed to assist the system to rid itself of effete matter, which if retained, hinders the organs from performing their functions, causes inaction and many diseases.

The juices of the various berries aid the system to overcome the lassitude caused by warm weather, and should be eaten freely in their season. The importance of fruit as an article of diet does not receive the consideration which it deserves. If parents were to realize their value there would be money saved from doctors' bills, and many less empty cradles and mourning hearts.

If the mothers in the country were correctly educated in regard to the value of fruit, used as it comes to us, stored with delicious flavors, the result of nature's alchemy, she would not spend time

laboring to form with it some health-destroying compound of grease and spices to tempt the appetite, but would go with her children into the orchard or berry field, inhaling the invigorating air and bathed in the magnetism of the sunshine, there would be no lack of appetite for dinner or supper, at which the golden or rosy-cheeked apples, or delicately-tinted berries are eaten freely, and the rest of neither mother or child would be disturbed by pain or restlessness, caused by indigestion.

When the lunch for school is prepared, if it consisted only of good, nutritious bread and plenty of mellow apples, or luscious grapes, there would be no occasion for complaint from headache and inability to study, for the stomach would not be clogged by indigestible food, and the brain would be in a condition to be trained and strengthened. Owing to its composition, the brain is not liable to be overworked when the digestive organs are in good order, and of those said to be injured by over-study in the schools, a majority have lived largely upon stimulating food and nick-nacks, to the exclusion of fruit.

Upon the same point, the *Western Farmer* makes a practical point: It is said of a doctor who became largely interested in peach growing, that he recommended peaches to his patients on all occasions. The story was told to illustrate the man's meanness; but if he was mean it was a meanness that benefited his patients. If men were wise they would spend two days in a vineyard or orchard to every five minutes in a drug store when anything is the matter with them. If you have dyspepsia, eat fruit. Did you ever think what a doctor gives for dyspepsia? He gives an acid. Fruit will furnish a better acid than the drug store will. Do you know what the doctors dose you with when your liver is out of order? With acids. Then why not supply the remedy yourself from your own garden? Why continue to have your medicine done up in such a repulsive mixture when nature furnishes it in so palatable shape.

"HARDY" IN HORTICULTURE.

The *Rural New Yorker* says that hardy is a relative term and often when used means absolutely nothing, for many plants and trees that do perfectly well in Wisconsin may not prove "hardy" in Ohio. Or again, plants that may succeed for years in one place may by some train of circumstances be injured or killed outright. So that hardiness does not vary with the parallels—that is plants do not necessarily grow less hardy as they are taken northward or *vice versa*. Winter killing, the *Rural* thinks, is not concomitant with want of hardiness. Whenever a plant, from unsuitable soil or situation, is

restricted in its season of growth, the plant must in some way suffer. But as the damage is not apparent until it has passed through the trying seasons of winter and spring, the remote causes thereof are lost sight of, while the severity of winter is alone held accountable.

ECONOMIC ORNITHOLOGY.

Prof. Stearns, of the Massachusetts Agricultural College, addressed the Connecticut Board of Agriculture upon the above topic, taking the ground that a majority of our birds were of value in repressing insect life. He said it was still a question how to place birds in two classes, beneficial or injurious; individual species lap over so upon each other in their habits. The hawks are acknowledged birds of prey; they catch our chickens; so, also, do crows, which have not been called predacious. The robin is another about which there is much dispute. It certainly eats fruit; it destroys a great many insects when they are more abundant than fruit, which is the greater part of the time. The young robin is insect-eating, and requires more than the weight of its body daily when growing in the nest. The swallows are sometimes annoying on account of the filth left about their nests, but they destroy vast numbers of insects, particularly those which infest grain fields; 500,000 insects is not more than would be required to keep the inmates of a single nest fed during the three weeks of growth. The blue bird collects his insect food near the buildings and on the lawns. The king bird should be cherished; if he can be induced to build in a cherry tree no robin or other bird will be allowed to take the fruit. The blue jay helps man by scattering and planting the seeds of fruit trees. The chickadee must be classed as a friend to the farmer, though he is somewhat destructive to other birds by destroying their eggs. Of the eighteen species of birds of prey which inhabit our grounds, thirteen remain with us the whole year.

A writer in the *Country Gentleman* takes a different view: Cultivators do not make sufficient discriminations between useful and noxious birds, and useful and noxious insects. There is no reason to believe that destructive insects are kept in check more by insect parasites which prey upon them, than by all the services performed by birds; and the insect-eating birds are as likely to devour these parasites, which are the friend of the cultivator, as noxious species.

We have had tens of thousands of curculios killed in our orchards by a single active hired man, and at the rate, while he was at work at them, of two thousand a day, but it has been rare to find one of these beetles in the crop of any bird. Had we waited for the

birds to do the work, our trees would not have borne the loads of yellow, and crimson, and purple fruit which we have enjoyed. The codling moth has for many past years nearly ruined our apples, notwithstanding the flocks of birds frequenting the orchards; the work of one man last spring, for less than one day, gave us fair apples on the loaded trees with not one infested specimen in half a dozen. The same man destroys tens of thousands of potato bugs with less labor than he cultivates the crop, but no bird except the larger domestic fowls will touch them. The orchard caterpillar is always destroyed by hand, the birds making no impression.

Of the clouds of insects which appear in summer, a large portion do neither harm nor good, and on these the insectivorous birds chiefly subsist. The question of the utility of birds has very little connection with fruit-growing. The matter of their encouragement rests with our interest in them on other grounds. There are a few species which live on the small fruits of summer, and sometimes sweep off in a few hours the careful labor of years; and these fruits the cultivator will be willing to allow them as a matter of choice, if he happens to prefer birds to fruit. Others will feel disposed to protect their fruit in the same way that they protect themselves against other noxious animals, such as moles, mosquitoes, etc.

KILL THE SPARROWS.

H. E. Bidwell, of Plymouth, in this State, took boards that had been placed near barrels in which apples were stored, and upon which many larvæ of the codling moth had congregated, carried them out and spread them on the ground to have the birds and hens destroy them. He recounts what followed in these terms:

I was greatly mortified to see the sparrows run over the cocoons in search of wheat screenings thrown out to call them down. My sorrow was soon turned to joy to behold a pair of blue birds come down as it were out of heaven, and alight on the nearest bird house, doubtless occupied by them last season, but which had been appropriated by the sparrows last winter. No sooner had they alighted than their bright eyes discovered the cocoons on the boards, and they darted down to secure the prize.

Disgusted with the sparrows, I took a step ladder and commenced to clean out the sparrow's nest in the blue bird's house. I found in the strings that composed their nest two curculios, three snapping bugs, one bee miller, one old female codling moth, and two recently hatched moths. Examining the strings, I found webbings of worms and burnt edges of cloth, and ascertained that they had

pulled the strings out of an old smudge left near a bee hive under an apple tree. This led me to examine the boards placed for the bee stands. (The bee hives had been removed to the cellar in the fall.) On the boards exposed to the sparrows all winter were numerous cocoons. One pair of our blessed little insectivorous birds is worth more to the fruit-grower than all the imported sparrows.

A correspondent of the *New York Times* takes the same view of the sparrows, closing a lengthy communication in substance as follows: Legislatures have passed laws protecting these pests, and farmers should insist upon having these laws abolished. Sparrows are not insect-eating birds. They devour the buds of trees in winter, and in summer devour fruit, grain and seeds. They are, therefore, out of the list of useful birds. They are, however, very good eating. They are always plump and fat, and are as good game as the reed birds. They are sold in the English and French markets, and are accounted a delicacy when entombed under the crust of a pie. It would be no pity to turn them to this use here, and as farmers are undoubtedly justified in saving their crops from the despoilers, they can not only do this but secure an agreeable variation from the frequent pork and bacon by shooting and trapping them, and having them served up in pies, or roasted in the oven.

SUCCESS WITH SMALL FRUITS.

E. P. Roe says that the secret of success in small fruit culture is found in two words, stimulation, restriction. By stimulation he means a thoroughly pulverized and enriched soil. This is especially essential to the strawberry, the foreign raspberry, and all the currants. A rampant growing raspberry like the Cuthbert or Turner, and our vigorous blackberries, do not require stimulation, but they do restriction. By restriction is meant the development of fruit rather than wood or vines. Set out a strawberry plant in very deep, rich, moist soil, and its first tendency is to follow the great law of nature, and propagate itself, but to the degree that it makes plants it cannot make fruit. Cut off every runner and enormous fruit buds are developed. The sap is dammed up as a miller restricts a stream, and the result is strawberries that are double in size and quantity. This is equally true of raspberries. Currant bushes crowded with wood bear little fruit.

JAMES VICK STRAWBERRY.

Inasmuch as the James Vick is brought to prominent notice this year we give the following estimate of it made by P. C. Reynolds, of Rochester, New York, who visited various plantations:

One of the first things that struck you in looking upon the fruit, next to numbers, was uniformity in size. There were no enormously large specimens and no small, but all large. The color was bright, deepening from scarlet in those just coloring, to crimson in those fully ripe. The form is nearly round with a slight tendency to conical. A milk pan full of these berries which had just been picked on another plantation which we visited the next day were a fine sight to behold. All large, bright, handsome; no need of topping off.

Now as to the quality of the berry. Eaten when it first reddens it has a quite sharp acid taste, modified by the presence of a large proportion of sugar, reminding you of sour fruit preserved in sugar. It gives it a lively flavor very different from the dull sour of many kinds of strawberries. Now select one that has assumed a crimson hue and the sugar has so gained upon the acid as to give you quite a sweet, sprightly, high-flavored berry—a berry of which you could eat many without their palling upon the sense. As to firmness, while less firm than Wilson or Triomphe, those highest types of firmness in strawberries, it would compare favorably, we should think, with most other varieties. We never yet had the pleasure of becoming acquainted with another strawberry that would bear the handling and keeping of the old Triomphe, and we fear we shall have to wait a long time before we see another like it.

THREE BLACKBERRIES.

Granville Cowing, of Munice, Indiana, says but three varieties of blackberries—Snyder, Wallace and Taylor's Prolific—have thus far proved profitable in this latitude. They are more hardy than any others, and have often passed through severe winters and perfected a crop of fruit, where all other kinds were killed to the ground. Last winter, for the first time since their introduction, they were much injured by a combination of drouth and intense frost, and produced but few berries; but such a winter was never before seen by the oldest inhabitant and may not be repeated during the present generation. Of the three, Taylor's Prolific proved to be the most tender; but it cannot be dispensed with on that account, because it is only the very late variety that will generally pass through our win-

ters in good condition. Snyder ripens about ten days before Wallace and two weeks before Taylor's Prolific. They are all remarkably productive, of the best flavor, and wholly free from rust, so destructive to Kittatinny and Western Triumph. Snyder and Wallace are strong upright growers, with large round leathery leaves, much alike in general appearance and wholly unlike any other variety. Wallace is quite as hardy as Snyder, and when its worth becomes fully known it will no doubt be extensively planted. Its berries are long and slightly larger than those of Taylor's Prolific, which are also larger than those of Snyder.

CULTIVATION AND MOISTURE.

The *Western Farmer* gives the following figures to show the advantage of deep cultivation: Take 1,000 tons of soil and dry it in its packed state, then expose it to an ordinary summer's atmosphere for 24 hours, and the absorption of moisture will be found in sandy loam equal to about five tons, clay loam seven tons, and garden mold twelve tons. Take the same soil, thoroughly pulverize and dry it, and then expose it in like manner to the other, and the sandy loam will absorb 26 tons, clay loam 30 tons, and the garden mold 45 tons. Thus it will be seen that the latter process is a guarantee against drought, to say nothing of allowing the roots of plants free scope to grow and seek nourishment for the plant, which they could not otherwise do. The saving of manure will be an item of importance, and the increase in production incredible. When the subsoil is clay, it will require several years of deep cultivation to thoroughly amalgamate it with the top soil, but once done, the productiveness of it will repay for the trouble and time taken to do it.

On the other hand, the New England Homestead talks about the danger of deep culture in certain cases, as follows: Fruit-growers must be reminded that their hoes, cultivators and plows may do more damage to plants than good, if not used with discretion. The small fruits—berries, currants, grapes, also dwarf pears, quinces, etc., root near the surface. Here are found the best roots, those that provide most nourishment. Nature designed these to be mulched by the dead leaves, and in our fields mulching would be the best treatment if it were possible. As it is the best we can do is to give frequent shallow cultivation. I have seen intelligent men plowing deep furrows alongside of their raspberries, currants and grapes, well satisfied that they were doing thorough work that would secure an abundant harvest. Let such men dig up one plant before thus plowing and one after, and see what butchery they have committed

There are no tap roots stretching far down into the subsoil, but simply a few laterals branching out, say from two to four inches below the surface, and more than half of these have been sacrificed by the plowshare. When we set green hands hoeing strawberries and newly-set raspberries, we know what they will do if not watched—they will destroy half their roots and loosen the hold for life that the struggling plants have secured, by chopping close about them.

CULTIVATION AND DROUTH.

Patrick Barry in his address before the Western New York Horticultural Society, of which he is president, said :

And now let us consider very briefly what the cultivator may do to avert the ill effects of a drouth, such as that of last summer. The most effectual and practical means within my knowledge is the constant and thorough tillage of the soil. According to my observation wherever the soil was kept finely pulverized and stirred by the horse-hoe or cultivator, or if in the garden with a good steel rake, at least once a week, the most severe drouths we ever experience here do very little harm. I have never seen better growth of nursery trees than during the past summer, and this is always the case in a dry season, with thorough cultivation. I have noticed the same effects in orchards. Where the ground was cultivated well the trees remained healthy in foliage and matured their fruit, whilst those not cultivated dropped both foliage and fruit to a great extent, and at the same time were injured for the future. The same effect has been observed in farm crops. When in California we were told by fruit growers that the first impression there was that no fruit could be grown without irrigation, but they had ascertained by experience that for trees irrigation was unnecessary. Thorough cultivation was sufficient, and in the most flourishing plantations we visited, the ground was kept so fine and loose that we sank into it over our shoes. We were surprised at the result.

PRUNING SHRUBS.

We are indebted to Ellwanger & Barry's descriptive catalogue for the following excellent suggestions concerning the pruning of shrubs :

Pruning, as sometimes practiced, has the effect to render trees and shrubs unnatural and inelegant, by shearing into cones, pyramids and other unnatural shapes. Every tree and shrub has a habit of growth peculiar to itself, and this peculiarity is one of its beauties. If we prune all alike into regular shapes, we destroy their identity.

The pruning-knife, therefore, should be used and handled with judgment to lop off straggling branches. Shearing may be practiced on hedges, but never on trees and shrubs.

While symmetry and regularity of form are to be admired in a shrub, this quality should never be gained at the expense of health and natural grace. Wiegalias, deutzias, forsythias, and mock orange, flower on the wood of the preceding year's growth, and hence these shrubs should not be pruned in winter and spring, but in June after they have finished flowering, when the old wood should be shortened or cut out, thus promoting the growth of young wood which is to bear flowers the following season. But spiræas, lilacs, althæas, and honeysuckles may be trimmed during the winter or early spring, and the branches should be reduced only enough to keep them in good shape. The old growth should be occasionally thinned out, and suckers and root-sprouts removed. The best time, however, for pruning all shrubs is when they have done flowering. The plumed hydrangea should be severely cut back and thinned early in spring. In pruning evergreens, use the knife occasionally to thicken the growth and preserve the shape. This may be done in April or May, just before the trees start to grow.

FACTS ABOUT PRUNING.

From *Colman's Rural World* we extract this bit of information:

"We look upon the roots as the parts which nourish, but the roots are the mouths through which food is taken. It is more correct to say that the stomach nourishes rather than the mouth, and the leaves of the tree rather than the roots. Some people seek to urge the growth of cions in newly grafted trees by removing all large limbs. They should remember that they thus remove that which induces growth, and after such severe slaughter many of the fibrous roots will be found dead, for if they have no work to perform they become feeble and short lived. We must distinguish the difference between trees and vines. If we wish the grape to grow vigorously, we cut it back closely, for its leaves are very large, and it has the faculty of covering a trellis with only a few buds. Thus we cut feeble growing vines back more closely than strong growing, for by close cutting we get more foliage than by leaving canes long. Therefore, in pruning trees the danger lies in cutting too much, and with vines in not cutting away enough. If you wish the tree to spread, cut to an outside bud; if to run higher and closer, to an upper or inside bud. Leave no crotches, as they are certain to break when laden. Cut close to the shoulder, but do not cut the shoulder. Remember that he who

does not trim at all gets the most growth of tree; yet he who trims often and wisely has the best orchard and fattest pocket book."

EDUCATING THE MARKET.

President Lyon believes we should work toward a higher standard in the quality of market fruits. He is sorry to see societies taking action concerning varieties that is not a look forward, and instances the efficient and time-honored Montgomery County Horticultural Society, of Ohio, which at a recent meeting is reported to have recommended not only the planting of the Wilson strawberry, but also to have coupled with it the Crescent—a variety the very opposite of the Wilson in all the qualities said so strongly to commend that *Arab* among strawberries, to the popular fancy; and one whose only and peculiar recommendations are, that the plant will take care of itself, in spite of neglect or hardship; while the poor, soft, sour fruit is produced in such abundance that, even at a diminished price, it can be profitably crowded upon a reluctant market at a profit.

He says in the *Ohio Farmer* "that the idea that markets can not be educated is a fallacy, and one that may, to a very considerable extent, be disregarded. This would seem evident from the fact that the present popular demand for the fruits in question (may we not say for all fruit?) has been clearly the result of education. One of our least attractive fruits—the Rhode Island Greening—has, in spite of such fault, come to be almost if not altogether a leading market variety; while the Seckel among pears, in spite of diminutive size and the lack of fine appearance, commands largely increased prices in almost any market so soon as its high quality comes to be known."

This incident is told of a Maine farmer, which is worth saving.

Five years ago this farmer sold his apple crop to a traveling buyer; he selected and packed the fruit most carefully, and put into each barrel a slip containing his name and address, with a request for a report from the purchaser of their condition when opened and the satisfaction they gave. He had no idea of their destination, but it so happened that the lot went abroad and into the hands of a dealer near Liverpool, who was so much pleased with their quality and condition that he wrote the grower to offer to take his next crop directly; this offer was accepted, and the wise grower has since had a permanent customer. Had he been more sharp than wise he might have succeeded in shoving off a lot of inferior fruit, or he might have "deaconed" each barrel—to use an old New England phrase—by putting the best at ends; but he would hardly have risked his ad-

dress, and he certainly would not have heard agreeably from the purchaser.

A HINT.

Chas. A. Green touches as follows upon a point that has been discussed with us:

No one but the initiated imagines how marvelously beautiful a basket of red-cheeked Crawfords or Foster may be made by stretching a two-cent strip of gauze or mosquito netting over it. The observer will notice that different colors of gauze are used with different varieties, which he supposes to be merely a matter of chance, but the suiting of the color to the variety is closely and shrewdly followed to the pecuniary advancement of the peach-grower. I saw a man exhibiting some Crawfords at the fair in baskets covered with pink gauze, and his peaches attracted a crowd, while others on exhibition equally large and showy were passed without notice.

GROWING CELERY.

A correspondent of the *New York Tribune* thinks he has struck the way of growing celery, and this is the way he tells about it:

We this year filled our old hot-bed frame, three feet by twelve, with celery plants, setting them about eight inches apart each way, making sixty plants in the frame. It has grown splendidly, and as fast as it grows we fill in with earth, so that it is blanching nicely. I believe that it would have done as well if planted closer, say 100 plants in the frame. The advantage is that it occupies but little space, is not much trouble to cultivate, and requires much less water to moisten it than if planted in the usual way, with the rows six or eight feet apart, besides a much smaller quantity of earth answers for banking it up for bleaching, and of course less labor to do it. If one has not a hot-bed frame he can set boards up at the edges of a bed in the garden, and manage it in the same way. Boards a foot wide should be used, and very cheap refuse lumber will answer for the purpose.

Mr. C. M. Hovey, of Boston, Mass., thinks that the fact that celery is now produced of better quality than formerly, is owing to the modern system of growing the plants on the surface of the ground like other crops and not in deep trenches. In regard to the former, Mr. Hovey says that Mr. Henderson's plan is the only safe one, and is precisely the same he saw practiced when a mere boy, and the one he recommended time and time again, and which he has

always followed. The second day of January he had beautiful celery from roots packed away in October, in this manner: A thin, light frame was placed upon the ground (on a dry sandy sub-soil), the earth was thrown out two feet or more down to and with some of the sand, which served as a banking for the frame. The roots were then set in, upright in rows, with the coarser foliage cut off, filling in any vacancies between the roots with sand. The frame was then filled with dry leaves and covered with tight shutters. No frost will penetrate such a covering, and there will be no dampness at any time. During the winter roots may be taken out and the covering replaced.

SOWING FLOWER SEEDS.

A writer in *Gardening Illustrated*, in speaking of the injury which may be done by the heavy watering of small flower seeds before they are up, recommends, in substance, the following treatment: Fill the bed with nearly the required quantity of soil; press it down smooth and level, a firm bottom being necessary; water this soil well with warm water through a fine hose; then fill up with firm, half dry soil to the required level, pressing gently. Sow the seed and cover it with very finely pulverized compost, giving no more water. Place a sheet of glass now over the seed, and the moisture from below will rise in sufficient quantity, while the surface will be left open and free and in the most favorable condition for the healthy germination of the seeds. Leaf mould answers well on the surface. Do not keep the glass on too closely, and gradually dispense with it by lifting or tilting.

GOOD SEEDS.

The Marblehead growers start with an ideal cabbage and select those which come nearest to it. They are carefully grown, and by pursuing this course, in a few years they arrive at their ideal. With well selected seed, in a favorable season, every seed will produce a good head of cabbage. Seeds are too often obtained from the refuse growth of the farms. Last year one of the best onion growers in Marblehead, not having seed enough of his own raising, bought some of the best seed he could find in Boston. Afterward, the dealer of whom he bought it inquired how it proved, and the grower answered that it would have been better for him to pay twenty dollars a pound for seed like his own than to have such seed as he bought given to him. The dealer, who had honestly intended to sell good seed, went to Marblehead to examine the crop and acknowledged that the grower

was right. The same is true of almost any crop. With good seed you must also cultivate well, but with the best cultivation and manuring, and poor seed, you will get poor crops.

MISSOURI MELONS.

Early in the year before our melons are fairly promising in the fields, our markets are flooded with large fine ones from Missouri. We have often wondered about the success of the growers, and recently found in a southern paper the following description of melon growing in Missouri:

The melon district extends from Morley, Scott county, to a point ten miles southwest of Charleston, Mississippi county, and is about twenty-five miles in length by twelve in breadth. Its peculiarity is a light loamy soil, underlaid with a bed of sand, in which water is found at a depth of a few feet. The roots of the vines penetrate the subsoil easily, and draw from it an exhaustless supply of moisture. About 3,000 acres were in cultivation last season, and the shipped product was 1,454 car loads—about half a crop. The average yield in a good season is a car load to the acre, the price ranging from \$60 to \$100 per car load. The crops are sold on the ground to purchasers who visit the district, gather the melons, load them in cars, and make their own arrangements with the railroads. The farmers have nothing to do with this part of the business. The following examples of individual crops are given: F. Ostner, of Dielstadt, shipped from 180 acres 50 car loads, which brought him \$3,000. The highest price he received for a car load was \$223, and the lowest \$22. Average price \$60. Henry Misefeld shipped 15 car loads from 35 acres, which yielded him \$1,500. Peter Olson cultivated 50 acres and received for the first 10 car loads, \$1,050. Woodley Thomas sold 20 car loads, from 35 acres, for \$1,200. Edward Gipson planted 60 acres and sold his crop for \$1,100. It will be admitted that, considering the protracted drouth of last summer, which, it is estimated, cut the crop short one-half, these are very satisfactory results for a work which lasts only about four months, and involves little or no expenditure of money.

KEEPING ONIONS.

W. W. Tracy, in answer to a question how best to preserve onions, has this to say in the *Michigan Farmer*: The onions are stored one or two feet deep on the tight floor of some barn or shed (the loft of a barn is frequently fitted up for the purpose), but kept at least two feet from the sides of the building. They are left

exposed until chilled or actually frozen, and then covered with about one foot of straw or marsh hay, the space between the wall and the onions being tamped solid. In putting on the hay care is taken not to disturb the onions in the least by stepping on them, but the hay is thrown on from the outside. As the cold increases more covering is added, until by mid-winter it is three or four feet thick and the onions are left severely alone until the approach of spring, when the covering is gradually removed, and the bulbs are usually found in the best of condition. The object in this method is to have the onions as dry as possible and then to chill or freeze them and keep them frozen until wanted, at the same time protecting them from the warm damp weather of a thaw, and preventing their being moved when frozen. This last is considered very important.

JUDGING POTATOES.

At our annual fairs, it is rare that the best potatoes get the premiums. Bulk contributes most largely to the award—water in organized cells piled up together in large tubers. This is admitted to be all wrong; but how to right this mistaken method of passing judgment when the judges are usually not skilled in ascertaining the facts which should be the basis of their awards is a fair question. Mr. William Rowe, of Grand Rapids, at the recent meeting of our local horticultural society, made a point that is worth recording.

He advocated a new plan of exhibiting potatoes—that is, new in our country. He said we should do away with showing potatoes in pecks, half-bushels, baskets and barrels, and exhibit them on plates the same as fruit. He would make this distinction in methods, however: Two plates of each variety should be required, one made up of tubers in their natural state, and the other should be a plate of the same variety cooked. He said by this means even the eye could detect fair quality; and if desired the sense of taste could be brought in to assist the judgment.

Mr. Rowe said that in England this method had been practiced for a long time, and at an English show the big potatoes rarely took the blue ribbon.

WINTERING GERANIUMS.

A good many suggestions are made as to the best way to keep geraniums in winter. We have recorded some of them; however, the following is new to our Portfolio, and is furnished by the *Country Gentleman*:

A rather large and well lighted window in a cool cellar is double

glazed and a stand is provided on which the plants are placed so as to receive plenty of light. When they are taken up in autumn nearly all the tops are pruned off, but enough is left for the base of a compact form, with a small portion of the young foliage, say about one-tenth or twentieth of the leaves of each plant. They are then planted in moss in a shallow box, placing the box in an inclined position or with a slope of about forty-five degrees, putting a layer of moss on the lower side, then a row of the trimmed plants and another layer of moss and row of plants till the box is filled. It is then placed in its position on the stand in front of the window. The moss may be kept sufficiently moist by showering it with a watering-pot once a month or a fortnight, as it may require, a warm and dry cellar needing more frequent watering than a damp or cool one. In a warm cellar the plants will make some growth during winter, and as the leaves increase in number they will consume more moisture than at first. If the cellar is quite cool they will remain nearly dormant, and the slight moisture from the moss will preserve them from drying up. Moss is much better than damp sawdust, which in its turn is better than soil. In moss there is no danger of their becoming water-soaked after watering, the natural supply being given off partly in the form of vapor. The most convenient size for the boxes is about two feet square and six or eight inches deep, but they may be larger or smaller. An early growth is made the next spring by putting them in a hot-bed for a few weeks before planting in open ground. A small portion of a hot-bed will hold a large number placed compactly together.

PANSIES.

W. H. White, in the *Country Gentleman*, says:

To obtain choice, large blossoms, pansies require very rich soil in a somewhat sheltered location. A bed which has been used as a hot-bed the previous season and left over makes an excellent place for them. Either of the following methods of growing plants will be found successful: Sow the seeds in a box of rich soil about the first of April, and set it in a south sunny window. About the middle of May transplant them into the bed where they are to blossom. Another way is to sow the seeds in a bed, where they are to blossom, about the first of September, and on the approach of freezing weather cover the bed with strawy manure. Or they may be sowed in any bed of good soil and treated in the same manner. They will come out fresh and strong in the spring and can be left to grow, or

may be transplanted to any desired location. Good seed, rich soil, and good care bring fine blossoms.

NATIVE FORESTS.

In the *Post and Tribune* we find the following:

While there is much said and written in regard to forest tree cultivation, we find very little attention paid to the preservation of native forests. In the timbered sections we have been too busy trying to get rid of the timber, to think of any method of preservation. Yet in some sections that were formerly timbered there is now felt to be a scarcity of timber, particularly of that kind which is useful in manufactures. The only remedy mentioned is the planting of forest trees for this purpose. But this is a work that we are hardly prepared for in this State and it is probable that only necessity will compel artificial planting. The time seems too long to wait for an investment of this kind to begin to pay, and there are very few who will undertake the work. At least very little has been done in this line. At the Agricultural College an experimental arboretum of four acres has been growing a few years; and a farmer in Monroe county has this year set 1,500 black walnut trees with a view to grow them for timber.

Would it not be well to study more closely the possibility of improving the timber lands that still remain. The woods still standing contain a vast amount of material which is susceptible of development in far less time than would be required for the planting and growth of new forests, the neglect of which furnishes a striking proof of the general ignorance of forest culture. The timber is ruthlessly cut from many places that are nearly useless for cultivation after, and would be worth far more for growing timber than for any other purposes, more beautiful to the eye, and more profitable. In many instances the native woods have been so much neglected or so injured as to be past redemption, yet there are still large areas of forest and smaller groves and wood-lots now yielding no revenue which might be developed into timber forests of very great value and at the same time yield an annual crop of fire-wood in the process.

Cut out the dead and least valued timber for firewood, preserve the small growing trees that are of the best varieties for timber. It will be necessary for the best care of the forest to keep stock from running in it as they will totally destroy all small growth. In almost every tract of woodland may be found more or less of trees of the best varieties for timber mingled with great variety that are worthless

or only fit for fuel. In many cases they have been neglected and cannot be improved, but in most cases intelligent work in thinning and pruning will be followed by profitable results.

ECONOMICAL TIMBER PLANTING.

In any business there is a good point gained when time and labor are so adjusted that nothing is lost. This is very true in tree planting on a large scale. What might be accomplished by the proper management of help for a dollar, often under mismanagement costs five dollars. Robert Douglass, of Waukegan, Ill., knows how to plant trees economically, and this is how he talks about it:

The land is prepared as for corn, rolled and marked 4 by 4 feet with a corn marker. The trees are heeled in at convenient distances around the land to be planted, or in some cases distributed in boxes; a wagon follows the planters so that a bundle of trees can be handed to each tree holder at any moment.

Our men work in companies of three each, two with spades and one holding and placing the tree; the two men taking each a row, the tree holder stands between the two rows; the tree should be placed as near the point where the marks cross each other as possible; to accomplish this the planter first strikes his spade down vertically on the mark close up to and beyond the angle; he then takes up a spadeful of earth so as to leave two straight sides to the angle; while he is raising the spadeful of earth the man (or boy) holding the trees inserts one: the planter drops the spadeful of earth, places his foot firmly close up to the tree and steps forward to the next mark. In this way there is not a motion lost; the first stroke of the spade is needed to allow the spadeful of earth to come up clean from the corner, and it is done in an instant, for the man naturally carries his spade in the left hand, and when he takes his step forward he simply strikes the spade down on the mark with its face to the right, draws it out, and places it directly on the cross line close up to the corner, raises up the spadeful of earth and drops it down again, covering the tree, for by the time he has the spade raised as high as his knee the tree will have been inserted.

An active, quick-motioned boy is as good as a man to hold the trees; he can attend to two men, but it keeps him busy. The trees are tied in bundles of fifty to one hundred, according to size. After a little practice he will be able to bring the tree to its place by an upward curving motion that will spread out the roots as well as they could be spread out with the fingers.

The best of spademen differ somewhat in their modes of ope-

ration; some of them in taking out the spadeful of earth incline the spade a little to the right in raising it to give room for the tree to be placed, and never having the spadeful raised higher than the knee; others raise it as high or higher than the waist and bring it down with great force, throwing it from the spade into the hole, so that it packs the tree quite solidly. You must understand that the earth is not inverted as in spading, but placed back exactly as it stood before, and when it is well done, and the earth is in good condition, it looks as if the ground had not been disturbed at all.

By this mode of planting we average 1,500 trees planted for every man and boy employed in a day of ten hours, 4,500 to a gang of three. Of course, larger trees where one spadeful of earth will not make a deep enough cavity to hold the roots will take longer.

PRUNING EVERGREENS.

Josiah Hoopes, in answer to a query in the *New York Tribune* as to the best evergreen tree that would grow tall but not spread much at the base, says that one can cause any evergreen of whatever species to adapt itself to this requirement. Nothing easier, and yet many cultivators still believe it is ruinous to use a knife on evergreens. Years of practice have demonstrated that no class of trees is more tractable, and, strange as it may appear to some persons, there is not a species known but what will form a new leading shoot without any difficulty. Begin when the tree is young, and every season (June is as good a month as any), with a strong pair of shears clip off the shoots to promote a denser growth and to prevent the branches from extending beyond a prescribed limit. Should the specimen incline to run up tall and slim, nip off the leading shoot, and this will generally induce numerous others to start out. As nature in her endeavor to supply a new central branch frequently overdoes the matter and furnishes an over-abundance, allow but one to grow, and that the strongest and in the most central position. There are a few varieties of some well known species that assume the columnar form without artificial assistance, as for instance the pyramidal Norway spruce, and occasionally a sport of the American arbor vitæ. Although not hardy in the Northern States, the pyramidal form of the European cypress is also a striking example. But such remarkably spreading trees as the Norway spruce, hemlock and the white pine may be compelled to assume the strictly erect growth by a systematic course of pruning such as has been described. In addition to the buds which are plainly observable on the branchlets, there are others beneath the outer bark, termed "adventitious buds,"

that are not noticeable, but which start into active growth whenever vegetation receives a check, either from removing a shoot or from the effect of disease of some kind. Among evergreens as a rule, however, this is not so marked as among the greater portion of the deciduous trees, but still sufficiently so to produce a denser growth of branches after pruning. After several years of continued pruning any species of tree adapts itself to circumstances, and requires but little aid from the knife, as is abundantly proved in the case of old evergreen hedges and specimens of "topiary" work. At first trimming induces active growth, but after a few years it does not act as an incentive.

At another time Mr. Hoopes talks about the pruning of evergreens as follows: The last of June is as good a time as any in the year for pruning them, as the new growth is not then hardened, and the wood has time to ripen properly before cold weather sets in. True, some evergreens will endeavor to effect a second growth, but as this is generally weak, it, too, will mostly ripen before frost. All species are benefitted by an annual pruning until they grow beyond our reach. The objections that have been raised in regard to the stiff formal character that pruned evergreens assume may have some weight when the trees are small, but as they increase in height and the clipping is discontinued the training of their early years shows to great advantage.

Upon this same point the *American Gardener* says: Evergreens should never be pruned in the fall or winter. The cutting off of the summer's growth during this season exposes the inner parts of the tree or hedge to the snow and cold winds of winter to their serious injury. Thousands of hedges are annually destroyed by such unseasonable pruning. Spring is the time for pruning evergreens, especially when large limbs are to be removed. Hedges which are to be kept as even and neat as possible may be pruned the latter part of June or first week in July. At this time the new growth is still soft, there is no danger from cold injuring exposed parts, and there is sufficient time for the ripening of the new wood before winter.

TRANSPLANTING EVERGREENS.

From a somewhat lengthy article in the *Rural Home*, by B. Goit, we cull the following good points:

First—In purchasing or removing evergreens, do so in cloudy, damp, or moist weather, and select those trees that are young and small in size, as the risk which is so very great in a large specimen

is comparably nothing on a small one. The chances of success are ten to one in favor of the small sample.

Second—In the act of removing the trees carefully preserve and take up all the roots that it is possible to get. This gives the tree additional chance in proportion to the number and entirety of the small roots secured.

Third—While the tree's roots are out of the ground, either for a longer or shorter period, carefully keep the roots shaded and damp, and entirely from the action of the sun, air, and drying winds. These influences, while so very beneficial to the tops of the trees, are most surely suicidal to their roots.

Fourth—Plant the trees again as soon as possible after taking them up, and as carefully as possible, spreading out all the young roots to the action of the soil and tramp well. See that the soil is free from all stagnant and injurious water.

Fifth—Immediately after planting the trees carefully cover the ground for some distance round the trees with well decomposed manure or chip yard scrapings to the depth of four inches. This covering or mulching, as it is called, is professed to be the great secret of successful tree planting, and especially so of evergreens. It tends to keep the ground cool and moist even in the dryest time, and is much to be preferred to any amount of watering.

Sixth—And lastly, if moisture must be applied, and something must be done to save the life of the tree in a very prolonged drouth, first take away the mulching and thoroughly stir the soil about the roots to some depth, and then apply water in plentiful quantities, then close all up again and replace the covering as before. Then quietly leave it alone to fight out the great battle of life, and in nine cases out of ten, it will—our word for it—most triumphantly succeed.

COMMON THINGS.

The *Philadelphia Press*, under the above title, after giving its opinion of nurserymen who will talk wisely about the beauty of the rare evergreens from abroad that ten chances to one will die on the hands of the purchaser, says:

When properly grown, nothing in the whole range of ornamental evergreens is superior to the hemlock and the white pine, and to recommend trees for the lawn and omit them seems like a slight to old and dear friends. The rich may sigh after something more "rare," and of course they can find it; but they can after all find nothing so adapted to all the needs of a lawn, for, besides being naturally stately, they can be dwarfed by cutting back, grown in

clumps, and worked into arbors, arches or bowers, hedges or screens, or in single trees of medium or magnificent size. They are "common" in a sense because they are found wild in our forests, but so are all the varieties of maple which can hardly be surpassed in beauty, as well as the oak, the tulip, and the chestnut. It is a bad taste which ignores or despises their native qualities of stateliness and beauty to hanker after what is odd and awkward because it is not common. So some men hanker after old and rare books merely because they are old and rare, though they may be of no earthly use except to exhibit as antique curiosities for the entertainment of guests. Some men would pay thousands for a copy of Elliott's Indian Bible, and yet could not be induced to spend a cent for the founding of a neighborhood library. These eccentricities of taste are not creditable, and it is to be hoped that farmers especially will not be led astray by them, and be taught to ignore the beauty which nature has lavished all around them in abundant profusion.

HORTICULTURE FOR CHILDREN—BY MRS. A. L. ALDRICH, FLINT, MICH.

In no age of the world have the needs, the capabilities, and the dignity of childhood been ignored, but at no previous period have the thought and intelligence of the time been as carefully directed to the development and growth of the youthful mind as now. Educators all over the land are devising the best means of utilizing the period of childhood as a foundation whereon shall stand the noble man—the best and greatest the world has yet produced. It has been proved a fallacy that the child must wait until he is "old enough" to learn. One of the wisest men of our time says: "It is the supposition that the several sciences constitute a succession of studies, some of which are adapted to childhood, others to the middle age of youth, while others can be mastered only by the matured mind. Whereas, the truth is, all science begins with simple facts—facts so simple that little children learn them, begin to apply them, and only cease this normal awakening when we set them at tasks, with text book, formula and theory, which leave no room nor time for natural development. Education may begin in the domain of horticulture. We know how the child will reach for a flower; that may be its instinct for color, or its imitativeness in regard to senses of smell, but almost as soon as it can walk beside you, show it a maple tree, and a fir, tell it the name of each, with some differences, adapted to its capacity for observation, and you will wait for its next remark with interest. It will undoubtedly be, 'There is another fir tree, and there another maple,' showing you that your object lesson

has not been lost. Perceptive faculties thus aroused never again become dormant. The next day the child imparts its information to his playmate, and is a hero. Later, show him the different varieties of maple, point out to him the characteristics of deciduous, and of evergreen trees, and continue this teaching, until his interest is thoroughly awakened, and he knows the name and history of every tree and shrub surrounding his home, and in his immediate vicinity. Thus he will acquire the habit of observation, also the habit of conversation, which is no less useful. Earlier than you would think of suggesting it, the child will be transplanting trees, or sowing seeds, the natural desire of proprietorship asserting itself. Naturally, with this preliminary training, he takes to delving in the soil—to gardening. And just here is where nature's nobleman, the horticulturist, is so often lost to the world. He becomes discouraged, because he does not succeed. He needs to be taught the results of experience, to be encouraged and helped at every step, then will he go on loving the work as he loved learning about the trees. Intelligent foresight and thought will help him to select the right seed, whether flower or vegetable; the right shrub or fruit tree or currant or raspberry, and to choose the right soil for each. Then introduce the study of chemistry and physiology; show him their application to plant life, teach him how the plants select and assimilate their food, the effect of stirring the soil, the uses of sunlight and shade, and you will be astonished at the result. It will be only a season or two before the child, still but a youth, can go alone and intelligently in this matter of cultivation. A great aid in addition to his love of knowledge, his instinct of proprietorship, and his desire for something to do, is to have a practical end in view. Some children love best to have the flowers appreciated for home decoration; some that they may use or furnish them to decorate the church, some to supply friends, some to sell. The same is true of fruits and vegetables. Study the character of the child, and use those means for help and encouragement which will best subserve that end. Enjoy the beauty and the fragrance if that will prove the best stimulus; purchase of him radishes, melons or cauliflowers, as you would of your grocer, if that will best keep him at the work. Let the pickles and the catsup, the canned strawberries and raspberries be the product of his garden. We mistake, and dwarf the capabilities of many a young horticulturist by putting this subject wholly within the range of sentiment. Work oftentimes grows in importance and interest if its proceeds help to gratify little wants. The time will come, and soon, when we will not need to dwell so strongly upon this matter of encouragement. When

this form of labor has become popularized, and it has become the fashion for every boy or girl to cultivate a piece of ground, we may simply furnish information, and its application will be readily made. As a hastening of this glad time, encourage enthusiasm. The bursting bud, the opening blossom, the ripening fruit, are each an inspiration. Its spirit stirs within the child; help him to a conscious understanding of it.

RECEIPTS.

Cider barrels can be easily cleaned by rinsing them with bisulphate of lime. This arrests fermentation. The bisulphate also becomes changed into sulphate of lime (plaster), and stops up the pores of the wood, thus serving a double purpose.

USING PARIS GREEN.

Prof. Lintner gives in substance, in his recent report, the following precautions to be used in applying Paris green and London purple for the destruction of insects: 1. Never distribute them with the hand, as an abrasion of the skin might result in serious harm. 2. Apply the powder with the wind, so as not to breathe it. 3. Apply only to leaves and fruit from which it will be entirely washed away by long and repeated rains. 4. Exclude all animals from feeding on the poisoned crops. 5. Test the strength of the prepared poison on a few plants first, lest it may be too strong and injure them. 6. Use it no stronger than will kill the insects.

TO KILL THE QUINCE BORER.

A New York fruit-grower used a mixture of one gallon of soap, two of water and one gill of carbolic acid, stirring the latter in as the suds boiled, as a remedy for the quince borer. Several applications should be made between May 15 and August 10. The carbolic acid is effective in destroying the eggs, the pupa and the perfect insect.

SAVING INJURED TREES.

For mice-gnawed trees a correspondent of the *German town Telegraph* recommends covering the wounds with grating wax at once,

then pile earth and pack it around high above the place to keep covered, as it will settle and wash down some. This if done early, will save thousands of trees that have been injured by mice and rabbits. Make wax of one pound beeswax to four pounds resin and a half pint of linseed oil. If too soft add more resin; if too hard more oil. The wounds must not be neglected till they are hard and dry.

KILLING STRAWBERRY WORMS.

Prof. J. L. Budd says that the gray worms with green heads, which infest strawberry beds to their great harm, may be destroyed in May by sprinkling with a weak solution of London purple. A slight poisoning of the foliage will destroy them at this stage, and close chemical analysis fails to detect any sign of poison when the fruit is ripe.

SULPHUR AND MILDEW,

An ounce of preventative being worth a pound of cure, why not strive harder to prevent mildew on grapes and other crops of fruits, vegetables, grains, cuttings or seedlings, many of which are liable to fatal attacks of mildew? Flour of sulphur being the recognized specific against mildew, why not add sulphur to the soil as a preventative? If thus furnished, why might not the roots of plants absorb more sulphur, and thus be much less liable to attack? Sulphur added to the soil I believe well worth trying. Dusting it on the foliage we know is a preventative worthy of far more general use. Plaster I would have dusted on foliage of various kinds this mildewy season, but could get none here, and was assured there was none to be had at Milwaukee.

A DISINFECTANT.

The *Prairie Farmer* says: A wash which is highly recommended for trees is made as follows: Take one bushel of lump, fresh lime, ten pounds of common sulphur (rock sulphur), ten pounds of common salt in water, tub to hold from thirty to forty gallons, then add from twenty to twenty-five gallons of boiling water, cover over; when cold brush it on with a whitewash brush, brushing into every crevice of the bark of the trees. It is said to be the best and cheapest disinfectant for all kinds of buildings where animal life is located; all the inside of cattle pens, railway cars, and cattle cars should be disinfected with it; it will prevent contagion, killing all germ animals, and prevent the eggs germinating.

A FAILURE WITH PARIS GREEN.

"Paris green has been so highly recommended by some of our Western New York State merchants that Mr. Hilman was induced to try that remedy for some of his trees that became infested in spite of the careful watching and inking of the trunks in early spring. But he will never try Paris green again for canker worms, for wherever it was applied with strength enough to kill the insects it also destroyed both foliage and fruit, and yet the mixture was not made stronger than is considered safe for application to potatoes, being at the rate of about a level teaspoonful to a pail of water, thrown on with a force-pump."

The account closes with a statement that Mr. Hillman's method, though comparatively new as applied to the apple, is very similar to that adopted by Captain Austin and others, of Dorchester, for the production of choice pears, such as used to be sold at six dollars per dozen in Boston market during the winter holidays.—*New York Tribune*.

CANNING.

Green's Fruit Grower says: A Rochester canning factory has canned $12\frac{1}{2}$ tons of black raspberries in one day, and has capacity for 25 tons. All fruit is placed in the can uncooked. It is then covered with syrup, the cans are sealed, and suspended in boiling water for a short time. The cans are then pricked and again soldered, then packed for shipment. Ruralists often cook their fruit to pieces before canning. They might follow the factory's method with better success.

KEROSENE AS AN INSECTICIDE.

Paris Green, London Purple, and other arsenical compounds are deadly poisons, and even when used on plants with the greatest care, are dangerous to both man and beast. Pyrethrum is effective and safe, but costly. The many experiments with kerosene as an insect destroyer, during the past two years, convinces leading entomologists that this well known and cheap fluid meets a long-felt want. The best method of applying kerosene is in a fine emulsion with milk, made by a process of churning, and afterwards diluted to any desired strength. The emulsion can be applied through a fine rose of a watering-pot, or on a large scale by a force pump with a spray nozzle. The kerosene, thus showered upon the plants, is very pene-

trating, and will destroy the insects in all stages of development, even to the eggs. Two parts of kerosene to one of sour milk is a proper proportion. If fresh milk is not at hand, condensed milk, diluted to the same strength, may be employed. This mixture, is successfully used for the scale insect in the orange groves of Florida, and can be, it is thought, employed to destroy chinch-bugs. A mixture of water and three per cent. of kerosene is deadly to the bugs, and does no harm to the growing corn. By spraying a few outside rows, nearest a ripening field of wheat, the whole area of corn can be protected from the second brood of the destructive chinch-bug. The apparatus for the cheapest and best application of the emulsion is yet to be devised. Doubtless a sprinkler drawn by two horses could be made, that, by passing between the rows of corn, would spray them quickly and effectively.

All farmers seriously troubled with insects should give kerosene a trial. By using a cheap grade of petroleum, the expense is small, and, with the necessary apparatus for applying the emulsion, a safe and successful war may be waged against the insect enemies. Much depends upon promptness and energy; therefore, the farmer should be prepared to act at the earliest warning. A barrel of kerosene, and a garden force-pump, with necessary attachments, ready for use, may come to be as essential a part of a well-equipped farm, or fruit and vegetable garden, as fire extinguishers in a city. Try the mixture on a small area, to determine the proper strength. It may be that one proportion is best for the potato-beetle, and another for the cabbage-worms, etc.; but the emulsion must never be so strong as to injure the plants upon which it is sprayed.

Says W. D. Boynton, in the *Prairie Farmer*: "There are two most important things to be kept in mind by the fruit-raiser—pruning and mulching. If these two duties are well performed, success is nearly always certain. If well mulched, the fertilizing material is thus supplied by filtration from the mulching down to the feeding roots, which is the very best self-regulating method of fertilizing. By allowing this mulching to remain in summer as well as winter, the roots are kept moist, and vegetation prevented from springing up around bushes, or a heavy sod from forming.

TERPENTINE AS AN INSECTICIDE.

A most prominent and reliable farmer of Northern Arkansas professes to have discovered a new use for turpentine. Himself and neighbors having been compelled to replant their corn every year, at

length his attention was called to the fact that the grains of corn were destroyed by microscopic animalcules that consumed the germs. He finally tried turpentine, by sprinkling, it among the grains and thoroughly rubbing it in. For ten years he and those who used this have never had to replant. Moreover, so powerful is the turpentine that its odor follows the stalks of corn during growth, protecting them from all kinds of insect enemies. Turpentine used freely on trees attacked by borers destroy the borers and adds vigor to the growth of the trees. Diluted in water and sprinkled or sprayed over delicate plants, vegetables, etc., etc., protects them from the like enemies, and stimulates their growth. Since learning the above I have seen it tried on apple tree borers with the effect to destroy the borers. Its odor seems to be as penetrating as musk if not so enduring.

CLEARING WEEDS FROM WALKS.

Salt is sometimes applied to gravel walks and roads in a liquid state, or in the form of strong brine used quite hot, or as near the boiling point as possible. This is said to be very effectual in preventing the growth of weeds. Sundry other solutions are also recommended for the purpose. But I know of nothing more effectual than a liberal dressing of dry salt, sufficient to whiten the entire surface of the gravel. A slight sprinkling is of little use, and may even increase rather than diminish the evil which it is intended to cure. In applying such a dressing as just recommended, it is, of course, necessary to exercise caution, in order to prevent the salt coming in contact with the grass, box, or other plants, which may form an edging to the road or walk operated on. In my garden last year some walks which were salted early in the season have been free from weeds all summer.

A correspondent of the *London Journal of Horticulture* finds gas-tar water very effective for cleansing weeds and mossy walks: "We give all our walks one application annually about this time through a fine-nosed watering can, taking care that none is spilt on the grass. Moss and weeds are destroyed instantly, and a weed on our walks is a rarity till the following autumn, when another dose speedily disposes of them. Worms, which are so troublesome about this time of the year on the verge of the grass, will not come near their old haunts for the rest of the season."

COAL OIL FOR TREES.

The caterpillars attacked a few of them last spring and would have ruined them outright, but the owner, seeing death was certain

unless immediate relief was afforded, determined to try the kill or cure system, and literally showered the infested trees with pure coal oil. The caterpillars were killed, and the trees put on new leaves and new life. The Captain says he is now sure of one thing, that coal oil is good for apple trees and bad for worms. The apples on the oiled trees are remarkably free from all indications of insect injury. This discovery will be of benefit to apple growers, as the oil, mixed with milk and water, can be easily syringed over the orchard while in bloom and thus prevent the attacks of the codling moth better than the use of Paris green.

Capt. Andrews has already obtained some crops of splendid apples from his orchard, the Ben Davis being remarkably superior. The trees of this variety are quite full this year, and he will have another excellent crop next year.

PARIS GREEN ON LARGE TREES.

At a recent meeting of the Massachusetts Horticultural Society Mr. J. W. Manning, after speaking of the universal prevalence of destructive insects, one following another through the season, said that the most effectual remedy for the canker worm is London purple or Paris green, the first being preferable. Being lighter it will remain suspended in the water better, and its color is such that it can be seen better. A slightly heaping teaspoonful to three gallons of water, or a pound to two hundred gallons, is about the right proportion; but the strength varies, and the exact quantity must be found by experiment. If too strong it will kill the leaves, and if not strong enough it will not kill the worms. It should be applied in a fine spray, either with a common garden syringe or by a portable pump with hose attachment. The latter may be placed in a wagon, with the poisoned water, for convenience in moving. All the foliage should be sprinkled. Sometimes it is necessary to make two applications, but frequently a single application will clear the tree for years. In the grounds of Amos Hill, of Belmont, where it was used in 1878, and those of the essayist, who in 1880 applied it to thousands of apple and elm trees in his nursery, few insects have been seen since, and a second application destroyed these. The best time is as soon as a perforation of the leaf can be seen, but it has proved effectual when the worms were nearly grown.

WASH FOR TREES.

Mr. Wm. Saunders, of the Department of Agriculture, gives a bit of his own personal experience as follows:

For the past twenty years I have used a mixture of lime and sulphur as a wash for the prevention and destruction of fungoid growths on all kinds of fruit trees, and with decidedly beneficial effects. It is now well ascertained that many of the diseases of both vegetables and animals are due to fungoid growths, and sulphur is the best known and one of the most potent antidotes for the mycelium and spores of microscopical fungi; and the most practical mode of using it is as an ingredient in the ordinary lime wash applied to fences and external rough wood-work. As a sanitary auxiliary in cities, its employment will become general as its usefulness in the prevention of zymotic diseases becomes known. If every fence, tree-box, out-building or rough wooden structure in this city could at once receive a coating of this wash, it would greatly check the spread of malarial disorders. It is not costly and the sulphur imparts additional adhesive qualities to the mixture. The wash is prepared by placing half a bushel of fresh burned lime and eight pounds of powdered sulphur in a tight barrel, slacking the lime with nearly boiling water, the mouth of the barrel being covered with a cloth. When cool it is ready for use as ordinary whitewash.

TOP-DRESSING ORCHARDS.

Cultivators are becoming more and more satisfied of the value of common manure for bearing orchards. Those which have been regularly top-dressed have borne much better the past scarce season than neglected orchards. The owner of an orchard of six acres, in a region where not one-tenth of a crop was raised the past season, sold over three hundred dollars worth of fruit from it. He has regularly top-dressed it for several years, and two sheep to each tree have picked up the fallen fruit infested with the codling worm.

RECIPT TO KEEP BORERS OUT AND RABBITS OFF TREES.

Four pounds of sulphur, one peck of lime, slacked with old soap suds, boiling hot, and stir well; when cold add one pint of crude carbolic acid. A sure preventative.

JACOB FAITH.

CONSTRUCTING FRUIT HOUSES.

Now that the season is approaching when orchardists give attention to providing accommodations for storing and keeping their crops, we offer a few practical suggestions on the best of the cheaper plans for their construction.

The apartments for keeping fruit in winter are at least of four

different grades. The lowest in the scale are common cellars, which are often too warm and damp, but variable in temperature, and the decay of the fruit is hastened by the foul odors coming from vegetables and other impurities, all in the same room. Fruit in such a condition mostly decays before spring. A great improvement is made when the space to be used is separated by a brick partition from the rest of the cellar, dampness prevented by a cement floor, and the temperature rendered uniformly cool by means of ventilating windows with the thermometer as a guide. Still more perfect are the special fruit-houses with non-conducting walls and roof, in which the cool air without may be introduced to any extent to keep the temperature uniformly cool. And lastly, the most elaborate and expensive houses are those which are kept at all times near the freezing point by means of ice.

By employing the third kind, fresh winter fruit may be easily kept till June, which is as late as profitable marketing requires, as there is little demand for old fruit as soon as strawberries and other very early kinds make their appearance. Houses cooled with ice are chiefly adapted to the preservation of summer and autumn sorts only.

One of the best forms of an apartment occupying part of a house cellar, and which will answer well for an ordinary family supply, has an air space beneath the wooden floor, and a space overhead filled with sawdust, six or eight inches deep, between the floors. The walls may be ceiled, and the small included space filled with sawdust. Even if only lined with building paper, this will prove a decided aid in rendering the walls a non-conductor. The windows may be double-glazed, and hung on hinges. There should be a chimney from the cellar. As soon as the thermometer indicates that the temperature is near freezing, the openings from without and the openings into the chimney are closed, and the cold air will be retained a long time, or until another cold night allows it to be replenished.

In its simplest form, this fruit room may dispense with the board lining, the bottom may be cemented, and an open window instead of the chimney may be placed opposite the other window. These opposite windows will effect the ventilation on cool nights, but not so perfectly as will the chimney. The "air space" is for the purpose of cooling the room in warm weather. The broad registers which are opened in warm weather to admit the earth-cooled air from below, which is drawn up by the ascending heated-current in the chimney.

In the construction of the more perfect fruit-houses occupying a separate building, various modifications have been adopted with different degrees of advantage. The following probably combines as many useful parts as can be united in one building at moderate cost. A small fruit-house, which will hold six hundred bushels or more, and will keep nearly all winter varieties well into spring. It is about 16 by 24 feet outside, the fruit room being 14 by 22 feet, and eight feet high inside. The underpinning is of stone, and has a 4-inch brick wall or lining, with two or three inches of air space. The upper part is made of vertical inch boards matched, in double walls six or eight inches apart, both lined inside with sheathing paper, and sufficiently bound together to prevent separating when the space is compactly filled with dry sawdust. It may have a double floor, with three inches of sawdust between, and a few openings below closely covered with board registers. As the floor sustains heavy weight, it must be supported on posts or piers. The windows and doors are double, the inner door opening inward and the outer outward. A small entry built on the outside contains the entrance door, and prevents too warm or too cold air from passing in. The floor overhead is double, with six inches of included sawdust. A large, square, board tube (a foot or more square) passes up through this floor and through the roof, for allowing warm air to escape in cooling the apartment. Its natural warmth, if greater than the outside air, will cause it to rise slowly, but the process will be much accelerated if it is capped with the ventilator, which will always cause an upward current when there is any wind or breeze. This ventilator is made of plank, the top held above the lower part by screw-rods, so that the wind sweeping through in any direction between the cap and sloping plank below, will draw the air up through the tube. A few smooth openings are left in the underpinning for the admission of cold air when required, to be shut closely when done with. A single smooth block or plug of wood, with a large button, made to fit accurately, is one of the best dampers for these openings. The temperature of the room should be constantly kept down nearly to freezing, by admitting cold air from without, a breeze making an upward current in the ventilator, causing the cold air to pour in through the openings below and up through the lower floor. The windows must be few and small.

The fruit is most conveniently kept in flat boxes, piled one above the other, the bottom of the upper one forming a cover for the next below. These flat boxes hold about a bushel each and the fruit

is easily examined by lifting them down in succession and forming new piles close beside the first. They admit of storing a large quantity within a small space when placed compactly together.

A larger and more perfect fruit-house contains two stories; is 24 by 48 feet outside, or 21 by 45 inside. The two stories will hold about 4,000 bushels, allowing half the interior space for passages. The walls may be of wood, like those described, with greater strength for increased size and contents; or they may be of brick or stone outside and wood inside, with space and sawdust; or they may be tripple brick walls, the middle one with bricks on edge, and all properly bound together. The ventilation is effected in the same way as in the last described house, the second floor being of slats, to allow a free passage of air from below. Posts and piers must be used to give sufficient strength. The house is filled with fruit through the side door, and then all are closed and packed. After this, access is obtained to the fruit from above, by passing up the stairs (which are enclosed outside) and into the attic. The stair-tower is six feet wide, to admit alternating stairs. By descending from above, the cold air does not escape from the apartments, as being heavier it will not rise. The attendant may examine the temperature of the rooms below without entering or disturbing them, by means of a thermometer set in a niche in the lower end of a square rod, which slides up and down through a square hole in the floor near the wall. The damper or register in the ventilator is simply a horizontal sliding-board. The attic is a tool-room.

The fruit-house may be varied in size to any required degree, by preserving the essential points.

If the ventilator-cap is not sufficient to effect the desired purpose and to cool the rooms promptly, a small stove may be placed in the attic, the warm air from which passing into the ventilator causes at once a sufficient current; and in this case the ventilator should be of bricks, and Mott's sheet-iron self-ventilating cap adopted. If the temperature of the room is likely to run too low and to endanger the fruit by freezing, the plank registers in the lower floor are opened and the warmth from the earth admitted.

To furnish an example of the successful keeping of fruit in a house built in accordance with the leading principles already laid down, but with some variations, and apparently inferior in some respects to the houses we have described, the following description of the fruit-house of S. W. Dorr is condensed from an account furnished to the Michigan Horticultural Society last winter. This house is 24 by 42 feet, was built on a hillside, cost about \$600 and would

hold about 5,000 bushels. Its fullest capacity appears to have been reached by placing the fruit in crates, each holding one bushel, and piling one upon the other like the brick in a wall, to form bins behind them along the sides. We infer that the bins thus made hold about four-fifths of the contents. We think it would have been better to have all the fruit packed in flat boxes, as elsewhere described in this article, as the whole contents could then be examined at any time without disturbing the fruit, by lifting one from the next under it and forming a new pile.

This house, like those we have described, was built on the cold-air plan, the cold air being introduced through ventilators on cool nights, and the temperature thus kept slightly above freezing by closing the double doors placed in the non-conducting walls. Mr. Dorr says that on referring to his memoranda, he finds that in one instance he held the temperature of the house for five months within three degrees of freezing, and that when the temperature of the air outside changed rapidly, or sixty degrees in twenty-four hours, the change in the fruit-room was too slight to note. At another time, in January, the temperature fell gradually in five days from 6° above to 20° below zero, but the temperature of the fruit-room was changed scarcely one degree. Mr. Dorr observed that the larger the fruit-room and the greater the bulk of the fruit in store, the less liable, as with other large bodies, was it to be affected by sudden changes. From past experience, he finds that good solid winter fruit may be kept in his house till midsummer; but on a careful review of the Chicago market for a term of years, he found the average highest prices about the 20th of May, after which winter apples are not eagerly sought for. His last shipment realized at this time 300 per cent. for seven months' storage.

The lower story of the house was built of stone and lined with four-inch brick walls. The lower slat floor was two feet above the earth bottom, and was supported sufficiently on stone piers. The rest is built of wood, with triple walls, ten inches filled with sawdust. There is an air space of two inches next to the inner ceiling on each side. The second floor (over the lower room) is made of slats, and is supported on posts. The attic or third story is covered with two feet of sawdust (one foot would doubtless do as well), and is a tool-room. The doors are double, the outer swinging out and the other in. The ventilation from without is effected through ten-inch sewer-tiles set in the walls below, which may be closed at option. A ventilating pipe two feet in diameter runs up through the center of the roof, with a damper and a hood. Thermometers are

essential. The following example is given of its management: On a cold day, with the thermometer 20° below freezing, it is 10° above freezing inside. In order to bring the inside down within 3° of freezing, the valve is opened in the two-foot pipe above and the flues in the basement below. The warm air goes up and the cold air comes in. When the air is thus gradually reduced to the desired point all the valves are closed, and the air kept at that point. But if the air is too warm outside keep them closed till there is another change to cold in the weather. With non-conducting walls, and with closed and packed doors and shutters, it was found easy to preserve the low temperature with a moderate degree of care. The fruit-room is entered through doors and an entry; but it would be better to have the entrance from above, so that the cool air will not escape through the sides.

Those who have used the best fruit-houses on the cool-air plan have kept strawberries in them two weeks in fair condition, after which they gradually lose their flavor. Late peaches may be kept from three to four weeks, with some deterioration, varying with firm or soft-fleshed varieties, and somewhat with the season.

THE KIND OF APPLE TREES NEEDED.

Eds. Country Gentleman:—In view of the often-published fact that the apple crop has failed again this year, and now for three years in succession, in some of our best fruit districts, like Western New York and a large part of Michigan, is it not time that our apple and apple tree growers began to look for some possible remedy or mitigation of their very serious loss? The cause of this failure, as I understand it, is comparatively weak fruit blossoms or sets. Fruit bloom and sets of the present list of standard sorts have almost succumbed to spring frosts, cold rains and winds, while the fruit bloom and sets of some of the Siberian crabs or common apple seedlings have withstood all, and perfected fair crops. What is the lesson or inference from these two facts, the one of miserable failure, the other of complete success? It is this—that our standard sorts of apples, however worthy as fruits, are not in tree up to our plain needs. We want just as good fruits as they are, borne on far more hardy, sure bearing trees. I know a tree of the improved Siberian crab in this vicinity, that this year bore, as near as could be estimated, 80 bushels of perfect fruit, and that, too, standing in an old and ordinarily very productive orchard of 60 trees, which bore this year, all told, probably not over 10 bushels. Now what is to hinder combining that hardy bearing habit of tree with the Baldwin, Red

Canada, Northern Spy, Greening and Belleflower market and desert superiority? Is not such a combination and consummation most devoutly to be wished, most zealously to be striven for? Do you say "impossible, or at least very distant, very unpractical?"

I grant you it is distant on our present system of—may I not in turn say, with these facts of failure in the apple crop in our very best apple districts staring us in the face, smiting us with bitter emptiness in the purse, our business stomach—most unprofitable adherence to our present list of accepted market apples? Where we experience failure shall we keep on in the old rut, or intelligently strive to mend our ways? You say it takes so long to get up and properly test new sorts. Very well; the more need then of commencing at once, so that you and I, perchance middle aged and old, may on earth enter the promised land of improvement and see success established in place of failure. The raw materials at hand for this proposed work of improvement, are simply boundless and perfect. I doubt anyone can imagine any reasonable apple excellence, but is already in existence belonging to some known or procurable graft or seedling. Why not then, like sensible people, give Nature, the master workman in that line, opportunity to perform the work of combination needed? Instead of trusting chiefly to chance fruit seedlings for our supply of improved varieties, why not put our wits at work, and go about it in business fashion, on a scale commensurate with the importance of the work? Every section should take hold of this for the sake of getting the sorts best adapted to it.

There are two sources to look to for this much needed improvement in our varieties of fruit for grafting and budding: 1. Seedlings already in bearing, scattered through the orchards, gardens, fence rows and thickets. How do I or how do you, dear reader, know but the best apple, pear, plum, cherry, peach, grape or berry of its season may be, this moment, growing on your place or in your next neighbor's place, "unknown, unhonored, and unsung," "wasting its sweetness on the desert air," because, forsooth, 'tis only a seedling. Careful search and liberal local and State agricultural and horticultural society premiums would tend to bring out such precious prizes, and put them in wider test and propagation. 2. Saving and sowing seed most likely to produce the improved sorts we need. Now why should I not be able here to direct inquiry as to what sorts of apples would be best for that purpose? Why is it that in the 260 years we have been growing apples in America, we do not at this late day know the best parent varieties to combine and save seed from? If breeders can produce such wonderful improvements in live stock, why not in fruits?

The most celebrated families of American apples, I believe, are: 1. Spitzenburg, including Jonathan, Red Canada and Northern Spy. 2. Rhode Island Greening, Swaar and Fall Pippin. 3. Fameuse, including St. Lawrence, McIntosh Red, Shiawassee Beauty, and several less known Canadian sorts. 4. Pennock or Romanite, including Early Pennock, York Imperial, Carthouse or Gilpin, Sweet Romanite, Minkler, perhaps Lansingburg, etc., etc. 5. Westfield Seeknofurther, including Pryor's Red and White Seeknofurther. 6. Rawle's Janet, Wythe and others. 7. Bailey Sweet, with Isham Sweet. 8. Rambo, with Fulton and White Rambo. 9. Baldwin, Hubbardston Nonsuch and Tompkin's County King. 10. Pearmain, including Winter and Summer, Benoni, White Winter, Pearmain, etc. 11. Sweet Bough, Primate, Hawley. 12. Vandervere of Pennsylvania, Vandervere Pippin and Smokehouse. In this list I would like to include Newtown Pippin, Yellow Belleflower, Winesap, Ben Davis, Smith's Cider, etc., but I do not know of any worthy descendants or relations. I would also name the Russets, but do not know any well known two that seem related. The Russian and Siberian families should be mentioned for the transcendent hardihood of tree, fruit bloom and sets; also for brilliancy of color of the fruit of many of their varieties.

As trees must precede fruits, so in the market apples of the future hardihood of tree must stand first, while hardihood of bloom and set, or certainly of bearing, takes the second place in the trinity of apple qualification. The third and last requirement is perfection of fruit. Thus we require, and will proceed to search for, or invent from the seed, ironclad hardihood of the tree, ironclad hardihood of blossoms and sets, and consummate beauty and excellence of fruit for family and market use. These three things we want in every cultivated variety of apple. Americans, thank Heaven, want the very best, and are willing and able to pay or hunt the world over, or invent to get it. How shall we go to work to combine these three needed qualifications in the market apples of the future? To begin now in the good work as the best thing in reach, let us save seed to sow next spring from the fruits and trees, whether grafts or seedlings, combining the most good qualities of tree and fruit. In every case let us work from and for good keeping winter varieties as most valuable. When striving and offering premiums only for choice winter apples, we shall stumble on choice new summer and fall sorts in abundance.

The very best, surest results of hybridizing fruit, if I rightly understand, are to be had under cover where all conditions can be

most perfectly controlled. What encouragement would be held out to the hybridizers, could we but be favored with the details of Mr. Rogers' system and wonderful success with grapes? Will he not most kindly take pity on us and tell us? Mr. Ricketts is another bright and shining example in grape hybridization—will he not kindly interest us, and help us with the other fruits as well? Sowing choice fruit seeds is investing in Nature's lottery, wherein every step of the way we learn. Thus repaid, there are no blanks in that lottery. Blessings on the person that grows or cares for a seedling fruit! From humble seed and despised seedlings have come and must come all our choice fruit.

F. K. PHENIX.

TOP GRAFTING.—BY URICH M'HALL.

The necessity of top grafting is caused principally by a bad selection of trees from the nursery, a mistake common to both orchardists and farmers. Not knowing the adaptability of certain varieties to any particular locality, a selection is rarely made that is wholly correct, and after years of hope and patient toil, when the different kinds begin to bear, some are found that are poor in quality, shy in bearing and very unprofitable. How to convert these worthless varieties into profitable bearing trees is the subject of this paper. This may be speedily done by the simple method of "top grafting," which I shall lay before you in accordance with my experience for the last twenty years.

The idea of grafting is almost as old as man himself, having been practiced by the ancients, according to the Sacred Word, and the various methods are so well understood by fruit-growers that it is unnecessary to dwell upon the principles of the art. Top grafting should be done at the first indication of the expansion of the buds in the spring, or sooner rather than later. The top should be rounded off with a fine saw, leaving the tree somewhat umbrella-shaped, cutting away all the limbs alike, grafting those that will best maintain the symmetry of the tree, allowing a portion of the laterals or minor limbs on both grafted and ungrafted limbs to remain the first year. The object of this is to continue the growth of the tree and to shade limbs from the hot sun of the summer months.

If the tree is depleted of all its leaf power but that which the new grafts afford, it will be very apt to sun-burn in much exposed parts. The growing laterals should be kept within bounds by pinching out the tender ends during the growing season thus encouraging the elongation of the grafts. By grafting the limbs as far out from the

trunks as practicable it avoids the necessity of grafting any very large limbs and allows more grafts to the tree which speedily increases the leaf force, one of the most essential features in top grafting. Two grafts should be inserted in limbs an inch or more in diameter and one graft in smaller ones. The method most applicable in this case is "cleft grafting," which consists in sawing off the limbs and smoothing with a sharp knife and a blow with a mallet on a splitting knife opening the limb for the insertion of the graft.

This last is done by shaping the graft, with three buds usually, to fit the opening in the limb; being careful the barks of the graft and the limb fit as nearly as possible. The graft having been inserted apply the wax for the purpose of excluding all weather, which is done as follows: Take equal parts of bees-wax, resin and tallow (lard will do but in less proportion) and melt them together, and while in a liquid state immerse strips of cotton rags, well worn, so they will not offer much resistance to the growing parts, and apply as follows: On the large limbs apply two strips longitudinally immediately over the slit that contains the grafts, with a slit in the upper end to lap over the graft at the junction of graft and limb, and by pressure cause it to adhere closely around the graft and by a rubbing pressure cause the strip to adhere, covering the entire wound caused by inserting the graft. Then apply a broad strip abundantly saturated with the composition on top of the wound, pressing *heavily* to insure a good, secure covering; and to complete the process, wrap narrow strips horizontally over *all* to insure their adherence till the parts, tree and graft, have united. Small limbs with one graft are wrapped differently. By a rubbing pressure attach the strip of cotton just below the wound and continue to wrap upward in roofing style, completely preventing all avenues of air to the wound caused by inserting the graft. The strips of cotton should be well saturated with the liquid, to insure, by pressure their firm adherence when applied. Strong paper will answer, with one side heavily waxed. The heat of the sun is generally sufficient to keep the wax in working order.

Remove all sprouts *near the grafts* as they appear. After the grafts have grown one year many of those laterals or inner limbs left for shade may be removed, and so on gradually till the grafts have become large enough to take command of the whole structure, when they will be bearing nicely. I would say, in conclusion, that it is unprofitable to graft old trees, say from twelve years and upwards, only for the purpose of testing new varieties speedily.

HISTORY

—OF THE—

Missouri Valley Horticultural Society.

BY Z. S. RAGAN, INDEPENDENCE.

The first meeting looking to the formation of a society of this kind was held at the office of Judge Lewis in Kansas City, early in the year 1868.

At that meeting, Judge S. P. Twiss, Dr. Malony, Judge Lewis, and others who were present, discussed the propriety of making an effort to organize. A subsequent meeting was called at which time an organization was effected by the election of Col. George Park of Parkville, Mo., as President; Judge R. J. Lewis, Vice-President; Col. Ferre, Secretary, and Dr. Maloney, Treasurer. The books containing the proceedings up to the year 1874 having been lost, leaves the society without authentic records of the minutes and proceedings to that date. Hence we are in a measure, under the necessity of trusting to memory for its early history.

At that time, however, a spirit of fruit raising pervaded the country in the increasing of orchards and vineyards for family use, both in city and country, and many large and extensive commercial orchards were being planted and in contemplation, thus awakening an interest calling for information upon the subject of horticulture.

A little in advance, or prior to the organization of the Missouri Valley Horticultural Society, Jackson County Horticultural Society,

at Independence, Mo., had been organized, and some of its members became members of both societies, which held their meetings on different days in each month, thus giving the members of each society the privilege which they often exercised of attending the meetings of each society; encourage co-operation and a fraternal relation that always characterizes horticultural associations.

By reference to the books and minutes of Jackson County Horticultural Society, we find during its existence, very full and interesting and many flattering reports from many of its regular meetings, to which, we can only briefly allude as connected with the history of this society.

Situated as Independence is, in the midst of fertile fruitful lands with many fine orchards, it would seem but little trouble to organize a society of this kind. Yet such proved to not be the case. It was only by the persistent and determined efforts of a few lovers of pomology, and after the third call that an organization was accomplished. By reference to the minutes we make the following brief quotations:

"Independence, Mo., December 18th, 1869. Pursuant to a call, a meeting was held at the office of Dr. Bryant and organized by calling Major Z. S. Ragan to the chair and appointing U. P. Bennett, Secretary. The following officers were elected for the ensuing year: President, Rev. A. Proctor; Vice-President, Z. S. Ragan; Secretary, U. P. Bennett; Treasurer, Dr. Jno. Bryant, Jr.; Directors, J. C. Blair, Lee's Summit; E. Milton McGee, Kansas City; W. E. McBride, Independence; Henry Parker, Independence, and A. Rennick, Independence. Z. S. Ragan read an address and Dr. Bryant, Sr., moved that a copy be furnished for publication and that our county papers be requested to publish the same together with the proceedings of this meeting."

This society rapidly grew into favor and popularity so as in a few years to far surpass the expectations of its most sanguine friends. As evidence of this, we have only to quote from the printed report of one of its out-door meetings; "The railroads ran special trains and that there were estimated to be fifteen hundred people present, and were entertained with addresses, essays and discussions, accompanied by a band of music, pic-nic dinner, gala time, &c."

The presidents during its existence were A. Proctor, Z. S. Ragan, Henry Parker, and U. P. Bennett. Its monthly meetings were kept up until the annual meeting December 18, 1873.

About that time the Jackson County Agricultural Society was discontinued, owing to the organization of Kansas City Exposition, in

the same county, as it was thought two successful fairs could not be sustained in the same county.

The matter was discussed as to the propriety of keeping up two separate local horticultural societies. Inasmuch as some members attended and had identified themselves with the Missouri Valley Society, and Kansas City being a great railroad centre, accessible from all directions and by its name and purposes, invited a district membership of not only Jackson, but the location made it convenient for Clay and Platte counties in Missouri, and Wyandotte and Johnson counties in Kansas; without limit to any and all other adjacent counties. Taking these facts all into consideration, it was concluded best to discontinue indefinitely the Jackson County Society, to allow all that saw fit to join the Missouri Valley Society.

We also find on file another association that was united with the Missouri Valley Society.

We quote from the *Kansas City Journal*, September, 1872:

"The annual meeting of the Missouri Valley Grape Growers Association was held in the fine art gallery on the fair grounds yesterday and by invitation was participated in by members of the Missouri Valley Horticultural Society and the Jackson County Horticultural Society. The members of the three societies gathered together in the morning and had an old-fashioned pic-nic. At 2 o'clock P. M. the meeting was called to order by President Ragan, who stated the object of the meeting, and regretted to see so few members present. He then gave a brief history of the society, which was organized two years ago and had held two meetings at Leavenworth and one at St. Joseph, the latter being held one year ago. He then announced as committees to examine fruits on the table, Messrs. Howsley, Lewis and Rennich. Committee on Grapes and Wines, Messrs. Hall, Stayman, Evans and Espenlaub. W. M. Hopkins, Committee on Grape Rot, and Z. S. Ragan of Committee on Blight, each made lengthy and interesting reports, which for want of space we are obliged to omit. This was followed by an animated discussion, participated in by Howsley, Stayman, Lewis, Salisbury and Ragan, and others, but no definite conclusion seemed to be reached. President Ragan then announced the time for election of officers had arrived, when it was moved and unanimously carried, that this society be merged into the Missouri Valley Horticultural Society, a cordial invitation to that effect being extended by members of that society."

Thus it will be seen that other local societies have cast their lot and influence in the hope of building up a permanent and live society

at the most central and accessible part of this great and growing and fruitful valley.

During Col. Park's administration in August, 1870, the society made its first effort to hold a fair, which was held in Frank's Hall, Kansas City, and \$104.00 offered as premiums, and a good show of fruits graced the tables competing for the premiums. At the first fair held by the Kansas City Exposition in the fall of 1871, an award was offered of \$150.00 for the best and greatest display of fruits. Mr. Storm of St. Joseph, entered with a great collection of fruits, collected from various portions of the State at great expense.

The Missouri Valley Horticultural Society concluded to make an entry contending for that liberal premium, and with the co-operation of a few of the members of the Jackson County Horticultural Society, the highest prize offered was awarded to the Missouri Valley Horticultural Society.

Col. Parks was president for two years, Judge R. J. Lewis succeeded Col. Park as the second president, D. L. Hall secretary, and S. W. Salisbury treasurer.

In the month of June, 1872, the experiment was introduced of offering monthly premiums and members were instructed to bring their finest specimens. This custom has been followed up to the present time and at each meeting a committee has been appointed to examine the fruits, vegetables, flowers and boquets, etc., that might be presented for the time being, giving decisions as to the best that were entitled to the awards. This has proved an interesting and attractive feature of the society, cultivating a spirit rivalry among its members and at the same time, giving interest to the meetings by bringing out the newest and best specimens in their respective seasons.

In the fall of 1873, the Kansas City Exposition renewed the liberal offer of \$150.00 for the largest and best display of fruits, by any horticultural society or association, and \$100.00 for the second best, and \$50.00 for the third best.

At the fair the Missouri Valley and the Jackson County Horticultural Society entered the ring among other competitors. The contest was spirited and called forth the best efforts and talent of each and every competing society to place the best specimens in most artistic arrangement and attractive display. These exhibitions were pronounced simply grand and were the centre of attraction in the main hall. However close the competition, the awarding committee placed the blue ribbon, giving the first premium of \$150.00 to the Jackson County Horticultural Society, and the red, second, \$100.00, to the Missouri Valley Society.

At the December meeting 1873, Col. J. C. Evans was elected President, W. M. Hopkins, Vice-President; G. W. Hopkins, Secretary, and S. W. Salisbury, Treasurer. At that meeting the president appointed the following committee to prepare a constitution and by-laws: Hall, Allen and Salisbury. That committee failing to report until the February meeting was dismissed, and the following gentlemen appointed, viz.: Holsinger, Sheffield and W. M. Hopkins. At the March meeting, 1874, the report of the Committee on Constitution and By-Laws was read, and the committee discharged. The Constitution with slight amendments was adopted by the society. Under the provisions of the Consitution the society elected five members to the executive committee, whose duty it shall be to report a list of premiums, also business for next meeting.

At the annual meeting, December, 1874, L. A. Garrett was elected President, Wm. M. Hopkins, Vice-President; L. A. Goodman, Secretary, and S. W. Salisbury, Treasurer. 1875 was one of the most discouraging years on fruit growers ever witnessed in this country, owing to the destruction of orchards by the Rocky Mountain Locust; yet, the society kept up its meetings and went through with the previously arranged programme, except the month of May, which was prevented by rain. At the annual meeting, December, 1875, the election resulted as follows, to-wit: M. J. Slocumb, President; Wm. Mustard, Vice-President; L. E. Bosley, Secretary, and S. W. Salisbury, Treasurer. Mr. Slocumb was re-elected again December, 1876, and served two years. During that time many useful subjects were discussed, of similar importance as the following:

1st. What general selection of fruits, and proportion of each, would be best to keep a yearly family supply?

2d. What method should be adopted to secure improved varieties of fruits and vegetables?

3d. As an average in years, which is the most profitable in western Missouri and eastern Kansas, raising fruit for market or raising farm crops or domestic animals?

4th. What remedies have been employed most successfully in repelling the attacks of the codling moth, the curculio, the potatoe bug and other insects injurious to the orchard and garden?

5th. What improvements may be made, in selecting, packing and marketing apples to secure more uniform prices, also other standard fruits?

These, with many other useful and practical questions were from time to time placed upon the programme, to be studied and discussed at the ensuing meetings.

Those who were present at the January meeting when this great and good man read his inaugural, will doubtless recollect that good and able document, and all who knew him will cherish his many good and noble qualities and devotion to the best interests of the society. It is a source of regret that such addresses, and many others of like importance have not been preserved and furnished to accompany this sketch. Yet, if preserved, may be of infinite value in a future and more comprehensive history.

Annual meeting December, 1877, Major F. Holsinger was elected President; Wm. Mustard, Vice-President; L. A. Goodman, Secretary; and S. W. Salisbury, Treasurer.

During Major Holsinger's presidency, the regular routine of business was gone through with at each monthly meeting.

Time and space will not permit to follow in detail. However, will make mention of enough to show that the time was well and profitably spent. Winter meeting—Berry boxes recommended, full size quart boxes, to be used by the society. Secretary instructed to make inquiry of what manufactory best terms can be had. Essay on flowers, by Secretary Goodman.

September meeting held at Z. Todd's, Clay county, said to be three or four hundred present. Fine display of fruits. Good dinner and good time generally.

Essay by Slocumb, on New Small Fruits.

By F. Holsinger, on the Bumble Bee, advancing new and novel ideas on the latter.

Essay by Salisbury, on the Honey Bee.

Essay by U. P. Bennett, on the Peach. Discussed at length.

Essay by Miss Canino, on Flowers. Very interesting.

Thus ended one of the best out door meetings of the year.

At the annual meeting December, 1878, the election resulted in choosing Maj. Z. S. Ragan, President; Maj. F. Holsinger, Vice-President; L. A. Goodman, Secretary; and S. W. Salisbury, Treasurer. Executive Committee, J. M. Slocumb, F. G. Espenlaub, L. A. Garrett, J. C. Evans and Wm. Hopkins.

The Secretary reported Cairo berry boxes at \$3.75 per 1,000. The Cobden box for \$2.50, and the crates for \$6.00 C. Peach boxes \$27.00 per 1,000.

At the February meeting, the Executive Committee reported a series of questions, for the year for discussions, and essays as follows.

The committee on Small Fruits, on Orchards, Vineyards, Vegetables, Flowers, shall prepare a paper each month, giving the condition

and prospects of their several departments, and the necessary care and labor to be bestowed the coming month. The chairman of each of the committees above named to take the lead at the March meeting, and then each member of the committee to follow in succession, and then follow the same routine again through the entire year.

The Committee on Ornamental Trees, each member to prepare a paper to be read at some meeting of the society.

The Committee on Entomology to give monthly notes on such insects as they may have knowledge of as being injurious to our fruits and vegetables, and each, also, to prepare a paper on some subject in his or her department.

The Committee on Botany to prepare from time to time a paper on the physiology of the plants from the planting, sprouting, growing and ripening, how it grows, how it feeds and on what it does feed, etc.

If at any one time, the discussion of any of the papers or reports before the society should assume a conversational form, it shall not be considered out of order, and shall be indulged in at the discretion of the President.

September meeting met at J. C. Evans, the largest meeting of the year; estimated at four or five hundred present.

The display of fruits was a grand affair, there being thirty-three entries, and one of the entries embraced thirty-three varieties of apples and three or four more nearly as large.

There were three or four entries of grapes, comprising nine to thirteen varieties.

Essay by L. A. Goodman, on the Formation of Boquets.

Essay on What Fruits to Plant, by Evans.

The Kansas City Exposition, having raised the premiums on *fast horses*, and cut down on *fruits*, it was decided not to make any exhibit at their Fair, but would aid in making an exhibition at the American Pomological meeting at Rochester, N. Y., where our fruits were awarded three of the Wilder Medals.

Such out door meetings as these, with the pic-nic dinner, and the social greetings are not only enjoyable, but had a good influence during President Ragan's term of office, (who was at the same time President of the State Horticultural Society.)

At a time when the State Legislature was in session at Jefferson City, and had ignored the State Horticultural Society, by striking out of a bill making appropriation to the State Board of Agriculture \$1,000.00, intended in that bill for the State Horticultural Society, President Ragan appointed a time when he would visit the

Capitol, and called to his aid J. C. Evans, Prof. Geo. Husmann, Gov. N. J. Colman and one or two other devoted horticulturists from different parts of the State, who met promptly and petitioned that Honorable Body to introduce and pass a bill of twenty-five hundred dollars, specially for the State Horticultural Society, for two years, or twelve hundred and fifty dollars each year. At the next biennial session of the Legislature, a similar appropriation was obtained through the same influence, or more particularly through the efforts and influence of the members of the Missouri Valley Society.

At the annual election of 1879, Maj. J. C. Evans was again elected President; J. M. Slocumb, Vice-President; L. A. Goodman, Secretary; and S. W. Salisbury, Treasurer.

For Mr. Evans and Secretary Goodman's promptness and devotion to the interests of the society and horticulture generally, they have been re-elected at each consecutive annual meeting since.

Indeed, there have been but few other changes, except in Treasurer. December, 1881, Major Holsinger became successor to Mr. Salisbury, who had served the society so faithfully for about ten years.

Thus it may be concluded, that the society is content to let well enough alone, or may be guilty of the practice of "whipping the free horses."

At the January meeting, 1880, President Evans in his address reviewed the doings of the society from its inception to that date, and also stated that the Kansas City Exposition was organized through the influence of the Missouri Valley Horticultural Society, or was an outgrowth of this society.

As before shown, it has been the centre around which other influences have contributed to sustain and build it up to what it is, and placed it on a footing that with faithful and persistent efforts of its members it may flourish and enlarge its usefulness.

In September, 1880, this society made an exhibition of fruits at the great Mississippi Horticultural show at St. Louis, Mo. and was awarded first premium, \$100.00, for best collection of one hundred kinds of apples by local society. Also premium on pears, peaches and apples, to the amount of \$230.00, aggregating \$330.00. Its members also made the principal exhibit for the State Horticultural Society, which was awarded the first premium, \$200.00, twenty-one States competing.

In the year 1881, this society made an exhibit of nearly seven hundred plates of fruits at the Bismark Fair, Kansas, and received

the highest award, \$150.00. Also, the same fall, first premium on the greatest and best display of fruits at the Kansas City Exposition, \$150.00.

In the year 1882, made another exhibit, both at Bismark and Kansas City Exposition, and received the highest premiums from each, of \$100.00. For several years were awarded the larger share of premiums offered at the annual meetings of the Missouri State Horticultural Society.

Thus it will readily be seen, that in its competitive exhibits of fruits wherever made has been successful, which is either evidence of this valley producing superior fruits, or of the skill of its members in arranging them for display on exhibition, or both.

Perhaps, the secret in some degree may be in the zeal and untiring devotion of its members in fruit culture and practical labor and experimental cultivation, regular and prompt attendance at all regular monthly meetings, where premiums are offered and awarded to all fruits in the season. This affords an opportunity to compare, test and discuss relative merits or demerits, as well as aspect, soil and modes of cultivation, etc., etc.

Successful fruit growing is not always through "flowery fields of ease," but often attended with great loss and disappointments. This country is yet new, and while it abounds in wild fruits equal to any other part of the world, yet, many of the fruit growers will experience disappointments, especially with favorite varieties brought from distant localities, where the soil and climate are different. Hence, one great secret of success will be in obtaining correct information through horticultural societies or practical fruit growers who have had the means of knowing what succeeds best in the immediate locality. The soil of this valley is not only rich, but all the undulating lands have perfect natural drainage and are susceptible of producing vigorous wood growth and maturing fruit equal to any part of the temperate zone and of great variety.

The membership of the society has never been very large, nor its meetings generally largely attended. Yet its members noted for promptness and active participation at regular meetings, carrying out to the letter the programme, may have entitled them to what prestage they may have gained. Yet it will not be expected of them to rest here upon their laurels, while there is a great and enlarged field of labor for usefulness claiming the attention of the enterprise of this locality upon the adornment of city and country

homes and schools and public grounds, drives, boulevards, cemeteries, landscape gardens, etc., etc.

In conclusion it is desirable that one other subject shall claim the earnest attention of its members and friends, to-wit: A horticultural hall under the control and for the use and convenience of the society. A sinking fund may be set aside for this purpose, and aid solicited and fortune may smile on this effort and some noble, generous person or persons come to the rescue and by beneficent bequest enable the society to erect a hall and that a library may be had adequate to the wants of the society.

COUNTY REPORTS

—OF—

Fruit of 1883 and Prospects for the Year 1884.

In December, I sent out a blank circular, No. 10, to one, two or three persons in each county of the State.

The idea of this was to obtain at least a partial report of the fruit crop of 1883, and the prospects for 1884, after the hard freeze of January 5th.

These reports are estimated sometimes, but it is my opinion in comparison with other counties, that the estimates are far under the actual amount, than over. In many instances they are about one-half of the true amount. Yet, it is a beginning of the work, and by another year we will find it much easier to collect statistics. I shall issue a circular about May 1st, for prospects of fruit, and another about August 1st, and on receipt of the answers I will issue another, giving the per cent. of fruit crop prospects for 1884.

L. A. GOODMAN.

ADAIR COUNTY.

We had a good meeting yesterday, well attended and we have our Society now permanently organized; John B. Newbury President, and Henry Spears Secretary. The third Saturday of each month is our regular meeting. We have a dozen or more good, live and energetic horticulturists in this county, and I think hereafter we will be heard from. I find it a big job to make out that report, but have

done the best I could under the circumstances. I have been very careful not to make it too large.

We had less than one-half of a crop, but there was shipped from the county about 7,500 barrels of apples. Not much other fruit in the county.

CHAS. PATTERSON, Kirksville.

ANDREW COUNTY.

Apples—Very fine. Crop, 150,000 bushels. Prospects very good for 1884.

Not much other fruit was sold, and there are no means of obtaining the amount. Prospects are good for all kinds of fruit except peaches.

WM. ENT, Savannah.

BATES COUNTY.

Apples—Acres 5,832. Crop 96,250 bushels. Prospects good.

Pears—All blight very badly.

Peaches—No crop and no prospect. Acreage 1,734.

Plums—35 acres.

Cherries—240 acres. Prospects good.

Strawberries—41 acres. Prospects good.

Raspberries, blackberries and grapes from 50 to 100 acres. Prospects poor.

H. B. FRANCIS, Mulbery.

BOONE COUNTY.

Apples—Standard varieties do well; 1,000 acres in bearing; Crop, 30,000 bushels. Prospects good.

Peaches—Killed by cold.

Strawberries, Raspberries, Blackberries—All the good varieties succeed well. Crop not known.

Grapes—Martha, Concord, Elvira, Uhland, Cynthiana, Lady Brighton. Crop 10,000 pounds. Yield is for market only, and the figures are estimates only.

PROF. S. M. TRACY, Columbia.

BUCHANAN COUNTY.

Apples—Varieties, Ben Davis and the most popular kinds succeed. Crop, 125,000 bushels. Prospects good for 1884.

Pears—Blight seriously.

Peaches—Amsden, Hale's, Stump, Crawford. Crop unknown. Prospect poor.

Strawberries—Capt. Jack, Downing, Wilson, W. Chief. 35 acres bearing; 2,500 quarts per acre. Prospects good.

Raspberries and blackberries do moderately well. Crop from 1,500 to 1,800 quarts per acre.

Grapes—Yield about 5,000 pounds per acre. Varieties, Concord, Telegraph, Martha, Goethe, Elvira, Moore's Early.

I send you the fruit report of this county. Some think I estimated the apple crop too low, but as far as I could learn from the shippers the account is correct as to what was shipped from the county, not counting what was used.

JACOB MADINGER, St. Joseph.

CALDWELL COUNTY.

Apples—Varieties, Rome Beauty, Smith's Cider, Ben Davis, Willow, Jannet, E. Harvest, M. Blush, Red Astrachan. 850 acres bearing. Crop, 25,000 bushels. Dare not predict the prospects for 1884.

Pears—None.

Peaches—Amsden, Troth, Smock, Heath. Crop, none. Prospects very poor.

Plums and cherries do moderately well.

Strawberries, blackberries, raspberries and grapes are doing well, but have no data for estimation.

C. L. GOULD, Gould Farm.

CASS COUNTY.

Apples—Most of the western varieties do well, and the crop was about seventy-five per cent. of an average. Prospects good.

Pears and peaches were a failure.

Strawberries, raspberries, blackberries and grapes all do well, but none grown for market as far as known.

PETER HELFRICH, Harrisonville, Mo.

CHRISTIAN COUNTY.

Apples—Nearly all varieties do well. Crop, about 15,000 bushels. Prospects good.

Pears—All varieties blight.

Peaches—None for 1883. All killed by freeze of January 5th, and none for 1884.

Plum—Wild Goose and Miner.

Strawberries, raspberries and blackberries—Nearly all varieties do well.

J. K. WEAVER, Ozark, Mo.

GASCONADE COUNTY.

Apple crop—25,000 bushels. Acres bearing, 6,000. Prospects good.

Grape crop—2,000,000 lbs. Acres, 1,500. Prospects good.

ROMMEL & SOBBE, Morrison.

GENTRY COUNTY.

Apples that succeed best—Jannet, Ben Davis and Winesap. Crop of 1883, 25,000 bushels. Prospects good.

Pears and peaches—None for 1883. Prospects bad.

Plums that succeed best—Miner and Wild Goose. Crop, none to sell. Prospects poor.

Cherries—E. Richmond best. Crop a failure. Killed by freeze.

Strawberries that succeed best—Crescent and Wilson's.

Raspberries that do best—Doolittle and Gregg.

Blackberries—Snyder.

Grapes—Concord.

C. G. COMSTOCK, Albany, Mo.

GREENE COUNTY.

A good deal was said, pro and con, regarding non-cultivation and non-pruning of orchards, at the meeting of the State Horti-

cultural Society. Since the meeting, in conversation with Mr. Henry Scholten, who is one of our largest successful fruit growers here, who believes in thorough cultivation and judicious pruning, stated that a large fruit dealer who visited the different aged orchards this fall, all about the same age and same varieties, offered him ten cents per bushel more for his apples than any others, of which he had about 3,600 bushels.

Apples—Varieties, Ben Davis, Willow Twig, Jonathan, Wine-sap, Smith's Cider, Jannet, Romanite, Minkler, Ingraham and New Pippin on certain soils. Crop, 20,000 bushels. Prospects good.

Pears—Bartlett, F. Beauty. Prospects good. Crop, 300 bushels.

Peaches—All do well when we have a crop. Crop, 6,000 bushels. Buds all killed.

Plums—Wild Goose and Chicksaw. Prospects good. Crop, 150 bushels.

Cherries—E. Richmond, English Morello. Crop, 300 bushels. Prospects good.

Strawberries—Chas. Downing, Crescent, Capt. Jack, Champion, Wilson, Cumberland. Crop, 35,000 quarts. Prospects fine.

Raspberries, blackberries and grapes do well where not troubled with the rust and rot. Prospects for all three very poor.

F. F. FINE, Springfield.

D. S. Holman, of Springfield, also corroborates the report, placing the apple crop at 25,000, and sends the following:

SPRINGFIELD, Mo., Feb. 6, 1884.

L. A. GOODMAN, Esq., *Secretary State Horticultural Society*:

DEAR SIR: I have approximated what should be our report as nearly as circumstances will allow.

The price for apples averaged \$1.00 per bushel. Summer varieties and wind-fall winter sold to evaporators at 40 cents. Winter hand picked \$1.00—at shipping in autumn. Now selling from wagons in our city (Ben Davis) to grocers and others at \$1.50. A very large percentage of our orchards planted for "profit" are young yet—a few just coming into bearing. The apple is our most hopeful fruit, winter varieties, of which Ben Davis is now "boss." Now that our facilities for reaching remunerative markets—and for the utilizing of surplus and unmarketable fruits in the way of evaporation at home are increasing, profitable fruit growing is not so much a problem with us. The outlook is brightening—the enterprise is quickening. Planting is now doubling its former self several times each season—and while the apple leads, peaches and

the small fruits are also receiving fair attention. Pears have blighted so terribly that we are all much discouraged and few will be planted until the "blight proof variety" on a Frenchman's seedling (?) comes to the front.

To tell you of the adaptability of our locality to fruit culture because of our peculiar soil and altitude would be unnecessary. If you are able to use the imperfect report I have made upon blank sent me, I shall be glad to have done what I could, and hope that next year and the following may give our county a better opportunity to report favorably.

Very respectfully,
D. S. HOLMAN.

HENRY COUNTY.

Apples, varieties—Ben Davis, Huntsman, Jannet, Winesap, Mo. Pippin, M. Blush, Red June, Rambo, E. Harvest. 95,000 trees in bearing. Crop of 1883, 70,000 bushels. Buds well matured and prospects good.

Pears—3,000 trees. Crop poor, badly blighted.

Peaches—Nearly all varieties do well. 50,000 trees in bearing. Crop a failure. Prospects poor.

Plums—Wild Goose and Miner. 6,000 trees in bearing. Crop, 800 bushels. Prospects good.

Cherries—May and E. Richmond. 1,000 trees in bearing. Crop very poor. Prospects good.

Strawberries—Wilson's, Chas. Downing and Capt. Jack. All right for 1884.

Raspberries—Miami, Doolittle and Tebo.

This report is, I think, about one-half too small—could not make a complete report.

J. M. PRETZINGER, Clinton, Mo.

HOLT COUNTY.

Apples—Ben Davis, Winesap, Jonathan. Crop, 130,000 bushels. Prospects good.

Pears—Duchess, Seckel, Howell. Crop, 1,000 bushels. Prospects good.

Peaches—Hale's, Alexander, Heath. Crop, none. Prospects bad.

Plum—Wild Goose, Weaver. Crop, 400 bushels. Prospects good.

Cherries—Richmond, English Morello. Crop, 20,000 quarts. Prospects medium.

Strawberries—Crescent, Bidwell, Cumberland.

Raspberries—Gregg, Souhegan, Cuthbert. Crop, 10,000 quarts.

Blackberries—Snyder and Taylor. Crop, 15,000 quarts.

Grapes—Concord, Martha. Crop, 30,000 pounds.

Prospects for raspberries, blackberries and grapes, not very good.

GOSLIN & MENIFEE, Oregon.

HOWARD COUNTY.

Apples—Varieties, Willowtwig, Ben Davis, Winesap, Rome Beauty, Jannet. 1,000 acres bearing. Crop 1883, 4,500 bushels. Prospects good.

Pears—Buerre de 'Anjou, Duchess, Seckel. Crop a failure.

Peaches—None at all. Prospects doubtful.

Plum—Wild Goose and Damson best.

Cherry—E. Richmond. Prospects good.

Strawberries—Crescent and Windsor Chief. Crop, 12,000 quarts. Prospects fine.

Raspberries—Miami and Gregg, black; Cuthbert and Turner, red. Crop, 5,000 quarts. Prospects fair.

Blackberries—Kittatiny and Snyder. Prospects good.

Grapes—Concord Martha, Worden, Va. Seedling, Brighton, Champion. Crop, 5,000 lbs. Prospects good.

Fruit crop very light the past year, and the above is only an estimate; but is near the true amount.

A. SPENCER WOLCOTT, Fayette.

JASPER COUNTY.

Apples—Varieties, Ben Davis, Red June, M. Blush, Jonathan, Winesap, Rome Beauty, Jannet.

Pears—Duchess, Bartlett, Doyenne D'Ete, Clarigean D. De. Bordeaux.

Peaches—Amsden, Alexander, E. York. E. Crawford, Stump, Heath Cling, O. Mixcn. Fruit buds killed.

Plums—Wild Goose, Miner.

Cherries—E. Richmond.

Strawberries—Crescent, Chas. Downing, Capt. Jack, Crystal City.
Prospects for all fruits good except peaches.

JAS. B. WILD & BRO., Sarcxie, Mo.

Also from Bennett Hall, Carthage, Mo., the following:

Apples bearing, 3,120 acres. Crop, 80,000 bushels.

Pears bearing, 60 acres. Crop, 3,000 bushels.

Peaches bearing, 400 acres. Crop, 2,500 bushels.

Plums bearing, 35 acres. Crop, 25,000 bushels.

Cherries bearing, 30 acres. Crop, 3,000 quarts.

Strawberries bearing, 55 acres. Crop, 55,000 quarts.

Raspberries bearing, 45 acres. Crop, 40,000 quarts.

Blackberries bearing, 50 acres. Crop, 50,000 quarts.

Concurs in the above report as to the varieties and prospects.

Also from C. A. Emry, Carthage, Mo., the following:

I was out to father's to-day, and after testing several peach trees we pronounced the fruit buds all killed, and in some cases the trees are killed, but we think the majority of the trees will come through alive, but perhaps severely injured. Mercury varied from 24 to 28 below zero—at father's 28 *strong*, rather a discouraging wave, but such is life. I will report after springtime comes the outcome of our peach trees, as I think time only can correctly judge them.

JACKSON COUNTY.

Apples—Varieties, E. Harvest, M. Blush, Jonathan, Penn. Red-streak, Ben Davis, Jannet, Winesap, Willowtwig, Rome Beauty, Mo. Pippin. Crop, 280,000 bushels. Prospects never better.

Pears—Blight so badly that I cannot recommend any as the best.

Peaches—No crop and prospect no better. Nearly all varieties do well when they bear.

Cherries—Were a very small crop. 1,000 bushels. Prospects only fair. E. Richmond and Eng. Morello are the best.

Plums—A full crop of native varieties, probably 1,500 bushels. Prospects good.

Strawberries—Varieties, Chas. Downing, Crescent, Cumberland, Miner's Prolific, Capt. Jack. Crop, about one half. 45,000 quarts. Prospects are very fine.

Raspberries and blackberries are troubled with the rust some what, and crop less than one-half, about 65,000 quarts. All standard varieties do well. Prospects only 50 per cent.

Grapes—Rotted badly and crop small. 160,000 lbs. Most varieties do well if we do not have too much rain.

All varieties of fruits do well; but the apple and raspberry are the best.

L. A. GOODMAN, Westport.

JOHNSON COUNTY.

Apples—Varieties, Ben Davis, Rome Beauty, Huntsman, Willow Twig, Jannet, Romanite. Crop, 110,000 bushels.

Pears and peaches, none to speak of.

Strawberries and raspberries, fair crop.

Blackberries—A very light crop.

Grapes—Very heavy.

The following fruits succeed best: Apples, cherries, strawberries, raspberries and grapes.

A. H. GILKERSON, Warrensburg.

LACLEDE COUNTY.

LEBANON, MO., Jan. 9, 1883.

L. A. Goodman, Esq.:

DEAR SIR: Your blank for report of the fruit crop of this county is at hand. It is impossible to make even an approximation to the facts under the specified heads, as fruit growing is not made a specialty by anyone. There are large orchards on a number of farms producing from five hundred to one thousand five hundred bushels of apples. About eight thousand bushels were used by evaporators here last season, representing probably about one-third of the crop, which was far below the average.

The finer varieties of peaches failed last year. Seedlings produced abundantly, but were mostly small. Pears succeed well, especially dwarfs, but have not been extensively planted. Plums receive but little attention on account of the curculio. Cherries are raised in yards and fence corners, but even with no attention, supply local demand. Strawberries are not receiving the attention they deserve—do well if protected from drouths; Wilson's, Sharpless, Capt. Jack and Crescent Seedling appear to be best adapted to our soil and climate. Grapes succeed admirably, but are only raised to supply home and local demand.

I regret that I cannot make a more specific statement, but owing to the absence of all organizations of fruit growers, it is not possible to make a correct statement as to acres, bushels, &c. It is too early to determine the probabilities for 1884.

M. W. SERL.

LINN COUNTY.

Apples—Varieties, Ben Davis, Jannett, Willowtwig. 560 acres bearing. Crop 45,000 bushels. Prospects good for 1884.

Pears—Varieties, Duchess, Bartlett, Seckel. Crop about 350 bushels.

Peaches—Varieties, Early and Late Crawford, Heath Cling, Smock. 240 Acres bearing. Crop none. Prospects zero.

Plums—Varieties, Wild Goose. Crop 400 bushels.

Strawberries—Crescent and Wilsons. Crop good. Prospects good.

Raspberries and Blackberries—Not many grown but succeed well.

Linn county is a good fruit county. Insects rapidly increasing. Peaches are killed by the cold of January 5th, 30° below zero. The acreage of apple rapidly increasing. Ben Davis the apple here.

Joseph Gamble, of Brookfield makes about the same report, only the apple crop placed higher.

RALPH SMITH, Laclede.

MCDONALD COUNTY.

Apples—200 acres bearing. Crop 10,000 bushels. Prospects not good. Ben Davis, best.

Peaches—Crawford E. & L. Crop about 2,500 bushels.

Plums—Crop 250 bushels. Wild Goose, best. Prospects good.

Cherries—Crop 75,000 quarts. Prospects fair.

Strawberries—Sharpless and Crescent. Crop 7,500 quarts.

All orchards are young and not well bearing. Plenty of wild berries and not much done with small fruits.

S. G. MELBORN, Pineville.

MARIES COUNTY.

Fruits that succeed best: Democrats, persimmons, plums and blackberries. Apples once in three years, a good large crop, a half crop, and then none. I think thirty miles from the Missouri river there is a fruit-line of some nature. Osage county last year had a full crop of peaches, we had just some, a sixth of a crop. Along the Missouri, apple orchards seem to give reliable results, and this distance south seem very uncertain—think our mid-summer drouth the cause, retarding the development of the fruit-wood and bud for the following year, and taxing the tree too severely to mature the existing crop. Think near the river it is less severe, having lived near Hermann a dozen years and here seven.

DEAN W. TAINTER, Vienna, Mo.

MILLER COUNTY.

ELDON, Mo., Jan. 18, 1884.

MR. L. A. GOODMAN, *Secretary Missouri State Horticultural Society, Westport, Mo.:*

I have filled out the blank as best I could after taking the trouble to go and see a number of the best farmers who own the largest orchards. So far as I can ascertain I am the only man that has strawberries, raspberries, gooseberries—except wild ones, and currants. Of these I have Wilson's, Great American and Monarch of the West, as strawberries, and so far I have had best success with the Wilson. Of raspberries I have the Gregg and Cuthbert, and like the Gregg the best. Of currants I have only Red Dutch, and have had good success with them. I have also Concord, Martha and Niagara grapes, but my vines are only two years old and of course cannot report for this part. I find there is very little, if any, budded fruit here, either in apples, peaches, pears, cherries or plums, nearly all being seedlings raised on the farms—as with my neighbors. I have done just the best I could under the circumstances.

Thank you for sending blank. Anything I can do at any time to further the horticulture of the State, will be gladly done. I think the talks I have had with different farmers in seeking instructions will lead to good results, and next year will be better able to give a more correct report. If nothing prevents, I shall set out considerable small fruit in in the spring, as I am certain we have a good

fruit county if proper care is only given. I have only been a resident of this county three years, came from Illinois. Anything further you may want at any time, I will do if you will let me know.

Apples—Ben Davis, Rambo, Jannet, E. Harvest. 1,200 acres bearing. Crop of 1883, 22,500 bushels. Prospects fair.

Peaches—Heath, Stump and Alexander. Fruit buds all killed.

Yours truly,

N. J. SHEPHERD.

MONROE COUNTY.

PARIS, MO., Jan. 19th, 1884.

I herewith send you report of my county as requested. It is, as you see, a meager report indeed, but I do as I think all should do, send it in any way for the general good. I do hope, that ere long, a better showing can be made. Of course, I can but approximate even in our chief crop, the apple. I have studied the matter well, and think I am close to it on apples, and as to the other fruits I cannot be far off on them. As you may know or readily infer, we have no horticultural society and I very much doubt if one could be sustained now.

Apples—Varieties, E. Harvest, Red Astrachan, Red June, Rambo, M. Blush, Fameuse, Ben Davis, Willowtwig, Winesap, Jannet. 3,000 acres in bearing. Crop of 1883, 150,000 bushels. Prospects good for 1884.

Pears—White Doyenne and Seckel, and old seedlings not many grown; 100 bushels; 50 acres.

Peaches—Seedlings. Crop, none 1883. (500 acres bearing.) Crop for 1884, killed. Thermometer 27 degrees below zero. Trees injured.

Plums—Wild Goose. Prospect fair. Crop, 50 bushels.

Cherries—E. Richmond.

Strawberries—Crescent, Capt. Jack, Glendale, Cumb. Triumph, Kentucky, Green's Prolific.

Raspberries—Turner, Miami, Gregg.

Blackberries—Snyder, Taylor's Prolific. Both badly injured by cold winter.

Grapes—Delaware, Ives', Elvira and Concord. Rot very badly.

J. D. HAWKINS.

OREGON COUNTY.

Apples—Varieties, Red June, Winesap, Ben Davis. Crop, 10,000 bushels. Prospects good.

Pears—Very few.

Peaches—Are all killed by cold winter.

Strawberries—Most varieties do well.

Blackberries and raspberries do well where tested.

Fruit in this county has not received the attention it deserves, but many trees are now being planted out.

BEN. GUNN, Alton, Mo.

PETTIS COUNTY.

Apples—Varieties, Ben Davis, Jannet, M. Blush, Winesap, Red June, Rambo. No. acres bearing, 600. Crop, 40,000 bushels. Prospects, one-half ruined by cold of January 5th.

Pears—Bartlett, Seckel, Duchess. Crop, 500 bushels. Prospects poor.

Peaches—Amsden, Hale, Crawford, Heath. Crop, 3,000 bushels. Prospects none.

Plums—Wild Goose, Damson. Crop, 2,000 bushels. Prospects fair.

Cherries—E. Richmond, May Duke. Prospects only medium.

Strawberries—Wilson's, Monarch, Downing.

Raspberries, blackberries and grapes were somewhat injured by the cold, and the usual varieties succeed well. Crop of each was good.

All these varieties of fruits succeed admirably here. A good fruit county.

[A report from G. H. Sheppard of Lamont, agrees substantially with the above.]

PLATTE COUNTY.

Platte County has an area of 420 square miles. This is divided into some 2,200 farms. At present the number of Apple trees planted, from the best estimation is 250,000, occupying about 50,000 acres of land. The amount of land planted in other fruits, we have no data on which to form an estimate. All the 'fruits' grown in this lat-

itude succeed equally well, so far as natural adaption to climate is considered, though blight will blacken some of our pear trees, the hard winter kills our peach buds once in a while, and the curculio will rob us of our plums, apricots and nectarines, still, many trees are planted, with a hope for success at last.

Our apple crop for the year 1883 amounts to 52,000 barrels, or 143,000 bushels. Varieties doing best are for Summer; Early Harvest, Early Strawberry, Early Pennock, Golden Sweet and Maiden Blush. Fall; Rambo, Lowell, Fameuse and Ortley. Winter; Rawles Janet, Wine Sap, Ben Davis, Jonathan, W. W. Pearmain and many others.

The yield of pears was, as near as can be estimated, 600 bushels. Varieties succeeding best are: Rastiezer, Tyson, Bartlett, Howell, Anjou, Seckel, White Doyenne, Lawrence and Duchess.

Peaches—Buds winter-killed, with a few exceptions.

Cherries—Very good yield, especially of the Early Richmond, which is the best. Next are May Duke, Montmorency and Reine Hortense.

Plums—If saved from insect ravages, were a good crop.

Grapes—A good yield, especially of the Concord, which is mostly planted. As a white grape the Elvira does very well.

All the varieties of small fruits had good crops. As these are only grown for home use thus far, most of the varieties can be said to be only on trial.

J. A. DURKES, Weston.

RIPLEY COUNTY.

Apples—Ben Davis and Winesap. 200 acres bearing. Crop, 3,000 bushels. Prospects good.

Pears—Crop small, few trees bearing.

Peaches—All varieties succeed well. About 200 acres bearing. Crop, 3,000 bushels. Prospects good for a full crop for 1884.

Plums and cherries do well. Prospects good.

Strawberries, raspberries and blackberries all do wonderfully well. Prospects good.

Apple crop of 1883 very fine and sound. We have a peach crop every year, also plums and grapes, which I think are of finer flavor than in the eastern states.

J. G. HANCOCK, Doniphan.

In answer to a letter whether peaches were injured I received the following notes:

January 5th was very cold, eight degrees below zero. Peaches are not injured. We always have a peach crop here, unless the spring frosts injure them, and that only on low lands. I think that all fruits succeed here better than in any other place I ever lived; all varieties do remarkably well. I have examined fruits in nearly every state east of the Mississippi river and have concluded that this is the best location I ever saw; can give you names of dozens who will substantiate this.

J. G. H.

VERNON COUNTY.

Apples—Ben Davis, best. 2,000 acres bearing. Crop, about 100,000 bushels. Prospects good. No fruit does better here than apples, which are very fine.

Pears—Duchess. Poor crop and poor prospects.

Peaches—300 acres bearing. Crop, 6,000 bushels. Fruit all killed for this year.

Plums succeed well, also cherries, but think they are injured by the winter.

Strawberries, raspberries and blackberries range from five to twenty acres each in bearing. Succeed well, and yet the winter injured the canes of blackberries.

Dr. Morerord and A. Ingraham give a list of varieties that succeed best:

Apples—Ben Davis, Jonathan, Winesap, Mo. Pippin, M. Blush, Huntzman and Red June.

Peaches—All varieties succeed.

Plum—Wild Goose, Egg, and Coe's Golden Drop.

Cherries—E. Richmond, English Morello.

Strawberries—Cumberland, Capt. Jack, Crescent.

Raspberries—Mammoth Cluster, Gregg.

Blackberries—Kittatiny, Snyder.

WAYNE COUNTY.

MR. L. A. GOODMAN, *Secretary Missouri State Horticultural Society:*

SIR: . In submitting a report of Wayne county, there is no data to work from. There is no society, or no organization of growers. There is but little interest taken in fruit growing here. There are no commercial orchards and no farmers that have planted more than a family orchard. In the small towns in the country there are a few

citizens that exercise some taste in selecting varieties for a small collection of fruits. The farmer, in buying, generally takes whatever the tree agent brings him, without exercising any choice himself.

Of grapes I have heard of but one vineyard in the county, and not having seen it I cannot speak advisedly. Of berries there are none raised for market.

That this section will grow fruit is demonstrated by the fact that wherever trees, vines and plants are planted, they bear under the neglected treatment they get. That the taste for fruit growing will improve is to be hoped.

Respectfully,

HENRY GRIFFING, Peidmont, Mo.

[The crop of fruits is about an average as reported, but amount not stated. SECRETARY.]

The report of the counties, as here given, is an item of what our State produces. The circular was sent out so late in the season that reports were received from only about one-third of the counties of the State, yet we have a good starter for the work to be done. Not one of these items is above the yield, but most of them were obtained from the amount shipped from each county. In reality, many of the county reports could be easily doubled and then we should have the amount of fruit sold, for in most cases there has been as much sold for home consumption as for shipment. The price realized for apples has been about 75 cts. per bushel; some being sold at 60 cts. and others at \$1.00—in February selling for \$1.50.

It is safe to say that our State has sold during the last year, apples that will amount to several million dollars and of other fruits fully one-half as much in value. Already the fruit crop of Missouri brings nearly as much as the wheat crop. Many thousand dollars worth of apples have been used by the evaporators of which scarcely any account can be given this year. But for the next year we hope to have a report from every evaporator in the State and every county also, and will then prove the assertion which we now make, that our State is behind none in the fruit business.

L. A. GOODMAN, Secretary.



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OCT 5 1902

REPORT

OF THE

Missouri State Horticultural Society

FOR THE YEAR 1883.

BEING A REPORT OF THE WORKINGS OF THE SOCIETY FOR
THE YEAR, TOGETHER WITH THE PAPERS AND
DISCUSSIONS AT THE 26TH ANNUAL
MEETING, HELD AT

CARTHAGE, MO., DEC. 11, 12, 13, 1883.

CONTAINING ALSO A CONSTITUTION FOR THE WORKING OF
LOCAL OR COUNTY HORTICULTURAL SOCIETIES, AND
"SECRETARY'S BUDGET," BEING CHOICE
CLIPPINGS FROM THE BEST HORTI-
CULTURAL PAPERS.

L. A. GOODMAN, SEC'Y, WESTPORT, MO.

JEFFERSON CITY:
STATE JOURNAL CO., STATE PRINTERS.
1884.

